

Global checklist of pseudoscorpions (Arachnida) found in birds' nests

Paola TURIENZO¹, Osvaldo DI IORIO¹ & Volker MAHNERT²

¹ Entomología. Departamento de Biodiversidad y Biología Experimental, Facultad de Ciencias Exactas y Naturales, 4º Piso, Pabellón II, Ciudad Universitaria C1428EHA, Buenos Aires, Argentina. E-mail: paolaturienzo@yahoo.com

² Volker Mahnert, Muséum d'histoire naturelle, 1, route de Malagnou, CH-1208 Geneva, Switzerland. E-mail: volker.mahnert@wanadoo.fr

Global checklist of pseudoscorpions (Arachnida) found in birds' nests.

- A compilation of the information on pseudoscorpions recorded from birds' nests is presented. Species and families of birds, and specimens, species and families of pseudoscorpions involved worldwide are given. 14 families (63 genera with 85 species) of Pseudoscorpiones were found in birds' nests, of which the Chernetidae is ranked first, with 22 genera and 35 species. Only 45 families of birds have been recorded as hosts worldwide, represented by a total of 98 species and a certain number of unidentified taxa. Geographical origin of these records reflects collecting efforts of individuals and gives no precise indication on the biological association between these two groups.

Keywords: Ecology - behaviour - phoresy - host association.

INTRODUCTION

The arachnid order Pseudoscorpiones, commonly known as pseudoscorpions, false scorpions, or book scorpions, comprise about 3.3% of the described arachnids, with 3 385 known species (Harvey, 2009). Pseudoscorpions are small (typically less than 4 mm in length) predacious arachnids, feeding upon small invertebrates (e.g., mites, springtails, various flies and gnats, ants, insect larvae, and occasionally small caterpillars). The general ecology of the group is poorly known; the most intensive studies on tropical pseudoscorpions have been carried out in the Manaus Amazon region, under the guidance of the late Professor J. Adis (Plön, Germany) (e.g. Adis, 1979, 1992; Adis & Mahnert, 1985, 1990). They live in leaf litter, under rocks, in compost piles, under bark and in decaying wood, in caves, and in various invertebrate and vertebrate nests (Beier, 1948, 1963b; Weygoldt, 1969).

No answer can be given to the question whether pseudoscorpions are arriving accidentally in the nests, if they are regular visitors, or if nests represent their favoured habitat. Beier (1948) had in his compilation enumerated 12 species found in birds' nests or on birds, citing two species as living exclusively in this biotope: *Diplotennus insularis* Chamberlin and *Hesperochnes montanus* Chamberlin, but all these conclusions were based on isolated findings. An exhaustive ecological study had been

carried out by Nordberg (1936) on the nidicolous arthropods of bird's nests in Finland (mainly from Aland, a few nests also from Tvärminne and Helsingfors), but unfortunately only three pseudoscorpion species had been identified. Krumpal & Cyprich (1988) tried to define ecological preferences of the 19 pseudoscorpion species found during their survey in the Czech Republic in 162 nests (representing 54 bird nest types) in relation to nest type (free nests, nests in nest boxes, nests in synanthropic habitats, nests in hollow trees) and seasonal changes. Ressler (1963) and Simon (1966), but also Jones (1978) discussed the eventual dispersal of pseudoscorpions by birds and the possible colonization of birds' nests. Recently, Christophoryova & Krumpalova (2010) distinguish within the pseudoscorpions nidixenous species (which occur accidentally in bird nests, the nymphal stages are represented sporadically) and nidiphilous or nidicolous species. They occur regularly in the bird nests, the nymphal stages are represented numerously, and prefer nests in certain habitats with specific building and microclimatic conditions.

An ongoing study on nidicolous arthropods in birds' nests from Argentina (Turienzo & Di Iorio, 2008; Turienzo *et al.*, 2008, Di Iorio *et al.*, 2010; Turienzo & Di Iorio, unpublished data) has yielded 246643 insects, 5378 soft ticks (Acarina: Argasidae) and 6406 pseudoscorpions. Consequently, a summarization of the knowledge concerning the pseudoscorpions known from this biotope worldwide is needed for further comparison. The main purpose of the present work is to: 1) provide a compilation of the information on pseudoscorpion species and families recorded from birds' nests, and 2) state which bird species and families are involved worldwide.

MATERIAL AND METHODS

The taxonomic and biological publications on pseudoscorpions were reviewed, as well as papers treating inhabitants of birds' nests; also included are unpublished identifications collated by one of us (V. M.). The bird families and species, followed by those of the associated pseudoscorpions, are listed in alphabetical order. All references were verified, except those indicated as "cited by", Museum collections and indications not given in original sources are cited between square brackets []. Bird species lists of the American Ornithologists' Union (1998), Remsen *et al.* (2008) and the Comitê Brasileiro de Registros Ornitológicos (2007) were used for current nomenclature; subspecific taxa not treated in these lists were updated from Peterson (2002). The nomenclature of pseudoscorpions is adopted from Harvey (2009). Old combinations, synonyms, misidentifications, original localities, number of specimens, and depositories when they were stated, are provided in each case. Pertinent comments in the references and controversial data are included in notes below the respective items.

Collections mentioned in the text

- AM Australian Museum, Sydney, Australia.
 BISHOP Bishop Museum, Honolulu, Hawaii.
 CNCI Canadian National Collection of Insects, Ottawa, Canada.
 EMB Ellen M. Benedict collection, Pacific University, Forest Grove, Oregon,
 USA

- INPA Instituto Nacional de Pesquisas da Amazônia, Núcleo de Pesquisas em Ciências Humanas e Sociais, Manaus, Brazil.
- LZPb Laboratorio de Zoología, Departamento de Biología, Universidade Federal da Paraíba, João Pessoa, Paraíba, Brazil.
- MNRJ Museu Nacional, Rio de Janeiro, Brazil.
- NHMW Naturhistorisches Museum, Wien, Austria.
- WAM Western Australian Museum, Perth, Australia.

PSEUDOSCORPION TAXA ASSOCIATED WITH BIRDS, NESTS AND GUANO

ATEMNIDAE

- Anatemnus orites major* Beier: Pycnonotidae.
- Anatemnus orites orites* (Thorell): Apodidae.
- Diploemnus insularis* Chamberlin: "in bird nests and on birds" (probably Sulidae and Laridae).
- Oratemnus navigator* (With): Apodidae.
- Paratemnooides nidificator* (Balzan): Passeriformes.

CHEIRIDIIDAE

- Apocheiridium (A.) indicum* Murthy & Ananthakrishnan: Passeridae.
- Apocheiridium (A.) minutissimum* Beier: Accipitridae, Halcyonidae, Phasianidae.
- Apocheiridium (A.) rossicum* Redikorzev: Anatidae.
- Apocheiridium (A.) stannardi* Hoff: Anatidae.
- Cheiridium museorum* (Leach): Apodidae, Columbidae, Corvidae, Fringillidae, Hirundinidae, Motacillidae, Paridae, Passeridae, Phasianidae, Remizidae, Sturniidae, Turdidae; birds' nests.

CHELIFERIDAE

- Chelifer cancroides cancroides* (Linnaeus): Apodidae, Columbidae, Corvidae, Fringillidae, Hirundinidae, Laridae, Phasianidae, Picidae, Strigidae, Sturniidae, Sylviidae, Turdidae, Tyrannidae; birds' nests.
- Chelifer cancroides orientalis* Morikawa: Hirundinidae.
- Chelifer* sp.: Passeridae.
- Dactylochelifer latreillei latreillei* (Leach): Columbidae, Emberizidae, Hirundinidae, Laniidae, Paridae, Passeriformes, Remizidae, Sylviidae, Turdidae.
- Hansenius torulosus* (Tullgren): Phasianidae.
- Paisochelifer callus* (Hoff): birds' nests.
- Rhacocheelifer maculatus* (L. Koch): Phalacrocoracidae.

CHERNETIDAE

- Acuminochernes crassipalpus* (Hoff): Strigidae.
- Acuminochernes tacitus* Hoff: Picidae.
- Allochernes powelli* (Kew): Hirundinidae, Passeriformes.
- Allochernes wideri* (C. L. Koch): Coraciidae, Corvidae, Muscicapidae, Paridae, Passeridae, Phasianidae, Picidae, Sittidae, Strigidae, Turdidae; birds' nests.
- Anthrenochernes stellae* Lohmander: Corvidae.
- Americhernes oblongus* (Say): Anatidae.
- Apatochernes antarcticus pterodromae* Beier: Procellariidae.

- Apatochernes nestoris* Beier: Procellariidae, Psittacidae.
Calidiochernes musculi Beier: Furnariidae, Troglodytidae.
Chelanops skottsbergi (Beier): Procellariidae.
Chernes cimicoides (Fabricius): Ardeidae, Hirundinidae, Laniidae, Paridae, Strigidae, Sylviidae.
Chernes hahnii (L. Koch): Meropidae, Paridae, Passeriformes; birds' nests.
Chernes vicinus (Beier): birds' nests.
Chernes sp.: Passeridae.
Dendrochernes cyrneus (L. Koch): Passeridae; birds' nests.
Dinocheirus panzeri (C. L. Koch): Columbidae, Corvidae, Hirundinidae, Laniidae, Paridae, Passeriformes, Phasianidae, Strigidae, Sturnidae, Sylviidae, Turdidae.
Dinocheirus sicarius Chamberlin: Phasianidae.
Hesperochernes montanus Chamberlin: Corvidae; birds' nests.
Lamprochernes chyzeri (Tömösvary): Phasianidae.
Lamprochernes nodosus (Schränk): Meropidae, Panuridae, Paridae, Remizidae; birds' nests.
Lamprochernes savignyi (Simon): Phasianidae; birds' nests.
Lamprochernes sp.: Hirundinidae.
Neochelanops patagonicus (Tullgren): birds' nests.
Opsochernes carbophilus Beier: birds' nests.
Parachernes argentinus Beier: Furnariidae; birds' nests.
Parachernes cf. *pulcher* Mahner: Furnariidae.
Parachernes squarrosus Hoff: Turdidae.
Parazaona bucheri Beier: Furnariidae, Psittacidae.
Parazaona morenensis (Tullgren): Psittacidae.
Pselaphochernes anachoreta (Simon): Corvidae.
Pselaphochernes scorpioides (Hermann): Corvidae, Passeridae, Upupidae; birds' nests.
Pselaphochernes lacertosus (L. Koch): Procellariidae.
Reischekia exigua exigua Beier: Ardeidae.
Rhopalochernes sp.: Icteridae.
Sundochernes malayanus Beier: Pycnonotidae.
Tejachernes stercoreus (Turk): Hirundinidae.
Troglochernes dewae (Beier): Cacatuidae, Climacteridae.

CHTHONIIDAE

- Chthonius (Chthonius) ischnocheles* (Hermann): Hirundinidae, Turdidae.
Chthonius (Chthonius) rhodochelatus Hadzi: Passeridae.
Chthonius (Ephippiochthonius) fuscimanus Simon: Emberizidae, Passeriformes, Turdidae.
Chthonius (Ephippiochthonius) tetrachelatus (Preyssler): Anatidae, Passeriformes, Turdidae.
Chthonius sp.: Muscicapidae, birds' nests.
Mundochthonius styriacus Beier: Paridae.
Pseudochthonius homodontatus Chamberlin: Passeriformes, Turdidae.
Tyrannochthonius heterodontatus Beier: Passeridae.

Tyrannochthonius kermadecensis (Beier): Turdidae.

Tyrannochthonius migrans Mahnert: Troglodytidae.

GARYPIDAE

Garypus titanius Beier: in guano of birds' colonies.

GEOGARYPIDAE

Geogarypus albus Beier: Pycnonotidae; birds' nests.

Geogarypus longidigitatus (Rainbow): Cisticolidae, Estrilidae, Nectarinidae, Pycnonotidae.

Geogarypus minor (Tullgren): Cisticolidae.

Geogarypus minutus (Tullgren): Cisticolidae.

IDEORONCIDAE

Xorilbia cf. *gracilis* (Mahnert): Troglodytidae.

LARCIDAE

Larca lata (Hansen): Phasianidae, Turdidae, Tytoniidae; birds' nests.

Larca notha Hoff: Hirundinidae.

NEOBISIIDAE

Neobisium (*Neobisium*) *carcinoides* (Hermann): Cinclidae, Emberizidae, Troglodytidae; birds' nests; birds' nests type *Motacilla*; nests Cinclidae+*Motacilla*.

Neobisium (*Neobisium*) *crassifemoratum* Beier: Tetraonidae; birds' nests.

Neobisium (*Neobisium*) *inaequale* Chamberlin: Sylviidae; birds' nests type *Motacilla*.

Neobisium (*Neobisium*) *sylvaticum* (C. L. Koch): Corvidae, Laniidae, Sylviidae, Turdidae.

Neobisium sp.: Emberizidae, Hirundinidae, Motacillidae, Turdidae.

OLPIIDAE

Calocheiridius olivieri (Simon): Phalacrocoracidae.

Indolpium loyolae (Murthy): Passeridae.

Pachyolpium irmgardae Mahnert: Formicariidae, Troglodytidae.

Xenolpium pacificum pacificum (With): birds' nests.

PSEUDOGARYPINIDAE

Pseudogarypinus frontalis (Banks): birds' nests.

SYARINIDAE

Ideobisium sp.: Passeriformes.

WITHIIDAE

Dolichowithius argentinus Beier: birds' nests.

Stenowithius bayoni (Ellingsen): Anatidae, Laniidae.

Stenowithius duffeyi Beier: birds' guano in nesting colonies.

Victorwithius proximus (Beier): Furnariidae.

Withius indicus Murthy & Ananthakrishnan: Phasianidae.

Withius kaestneri (Vachon): Phasianidae.

Withius piger (Simon): Phasianidae.

BIRD TAXA AND ASSOCIATED PSEUDOSCORPIONS

ACCIPITRIDAE

Ictinaetus malayensis Temminck, 1892

CHEIRIDIIDAE

Apocheiridium minutissimum Beier, 1964

Malaysia: Pahang, Fraser's Hill, 15-I-1956, McClure leg., 1 exuvia, Ser. No. M-03118, Band No. H. 87082, in a nest of Black Eagle (Beier, 1964).

ANATIDAE

Aix sponsa (Linnaeus, 1758)

CHEIRIDIIDAE

Apocheiridium stannardi Hoff, 1952

USA: Michigan, Shiawassee County, in nest box (Nelson, 1971: "accidental occurrence?").

CHERNETIDAE

Americhernes oblongus (Say, 1821) (= *Lamprochernes oblongus*: Nelson, 1971).

USA: Michigan, Shiawassee County, in nest box (Nelson, 1971: "accidental occurrence").

Anas platyrhynchos (Linnaeus, 1758)

CHTHONIIDAE

Chthonius (Ephippiochthonius) tetrachelatus (Preysler, 1790)

Slovakia: (Fenda *et al.*, 1998).

Anas undulata (Dubois, 1839)

WITHIIDAE

Stenowitzius bayoni (Ellingsen, 1910)

Uganda: Chagwe, Seziwa Swamps (Ellingsen, 1913; Beier, 1948).

Undetermined species ("wild duck": Redikorzev, 1938; Beier, 1948).

CHEIRIDIIDAE

Apocheiridium rossicum Redikorzev, 1935

Russia: Siberia, Ienissei, on head of wild duck (Redikorzev, 1938; Beier, 1948).

APODIDAE

Apus affinis (Gray, 1830) (= *Cypselus affinis*: Ellingsen, 1914, Beier, 1948).

ATEMNIDAE

Anatemnus orites orites (Thorell, 1889)

India: Calcutta, from a nest in the Museum buildings (Ellingsen, 1914; Beier, 1948).

Oratemnus navigator (With, 1906)

India: Calcutta, from a nest in the Museum buildings (Ellingsen, 1914; Beier, 1948).

CHEIRIDIIDAE

Cheiridium museorum (Leach, 1817)

India: Calcutta, from a nest in the Museum buildings (Ellingsen, 1914; Beier, 1948).

Apus apus (Linnaeus, 1758)

CHEIRIDIIDAE

Cheiridium museorum (Leach, 1817)

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1983).

CHELIFERIDAE

Chelifer cancroides cancroides (Linnaeus, 1758)

Austria: Lower Austria, Scheibbs Distr. (Ressler & Beier, 1958; Ressler, 1963, 1983).

ARDEIDAE

Ardea cinerea Linnaeus, 1758

CHERNETIDAE

Chernes cimicoides (Fabricius, 1793)

England: Kent, High Halstow (Jones, 1975, 1978).

Egretta alba modesta (Gray, 1831)

CHERNETIDAE

Reischekia exigua exigua Beier, 1976

New Zealand: Westland, Okarito, in old broken-down white heron nests, sample 68/5 (Beier, 1976).

CACATUIDAE

Cacatua galerita galerita (Latham, 1790)

CHERNETIDAE

Troglochernes dewae (Beier, 1967)

Australia: Queensland, Fringe Dwellers, Iron Range, circa 12°38'S, 143°05'E, 9-X-1998, S. Legge & R. Heinsohn leg., 1 ♂ [WAM T66299], nest of Sulphur-Crested Cockatoo (Harvey & Volschenk, 2007).

Calyptorhynchus latirostris Carnaby, 1948 (= *Cacatua latirostris*: Harvey & Volschenk, 2007).

CHERNETIDAE

Troglochernes dewae (Beier, 1967)

Australia: Western Australia, Shire of Moora, 30°35'S, 116°01'E, 20-XI-1998, P. Mawson leg., 1 ♂ [WAM T66300], ex nest in healthy hollow of *Eucalyptus salmonophloia* (Harvey & Volschenk, 2007); Gingin Shire, 30°59'S, 115°45'E, 20-XI-1998, P. Mawson leg., 1 tritonymph, 1 ♀ [WAM T48341], ex nest # 84 (Harvey & Volschenk, 2007).

Eulophus roseicapilla (Vieillot, 1817) (= *Cacatua roseicapilla*: Beier, 1967; Harvey & Volschenk, 2007).

CHERNETIDAE

Troglochernes dewae (Beier, 1967) (= *Sundochernes dewae*: Beier, 1967).

Australia: New South Wales, Brewarrina, 29°58'S, 146°52'E, ♂ holotype [AM KS5867], 1 protonymph, 2 deutonymphs, 2 tritonymphs, 1 ♀ (paratypes) [AM KS5868], 1 nymph, 1 ♂, 2 ♀ (paratypes) [NHMW], V-1964, B. Dew leg., from nest of Galah in hollow tree (Beier, 1967, Harvey & Volschenk, 2007).

CINCLIDAE

Cinclus cinclus (Linnaeus, 1758)

NEOBISIIDAE

Neobisium (Neobisium) carcinoides (Hermann, 1804)

Slovakia: (Fenda *et al.*, 1998).

Cinclus cinclus (Linnaeus, 1758) + *Motacilla* sp.

Neobisium (Neobisium) carcinoides (Hermann, 1804)

Slovakia: (Fenda *et al.*, 1998).

CISTICOLIDAE

Cisticola lais Hartlaub & Finsch, 1870

GEOGARYPIDAE

Geogarypus minutus (Tullgren, 1907) (= *Garypus minutus*: Ellingsen, 1912).

South Africa: Cape Province, King William's Town Div.: Pirie, a very immature specimen rather doubtfully referable to *G. minutus*, from a nest of a grass warbler (*Cisticola lais* Sharpe) (Ellingsen, 1912).

Prinia flaviventris (Delessert, 1840)

GEOGARYPIDAE

Geogarypus longidigitatus (Rainbow, 1897) (= *Geogarypus elegans audyi* Beier, 1952: Beier, 1963a).

Malaysia: Selangor, Rantau Panjang, 8 km N of Klang, 12-VII-1961, 1 tritonymph, nest 234, B.53395 (Beier, 1963a).

CLIMACTERIDAE

Climacteris rufa Gould, 1841

CHERNETIDAE

Troglochernes dewae (Beier, 1967)

Australia: Western Australia, Yilliminning Agricultural Region, 32°56'S, 117°25'E, 6-III-1999, G. Luck leg., 1 deutonymph, 2 tritonymphs, 1 ♂, 1 ♀ [WAM T66301], ex nest # 206 (Harvey & Volschenk, 2007).

COLUMBIDAE

Columba livia domestica Gmelin, 1789 (= *Columba* sp., city pigeon: Woodroffe, 1953).

CHEIRIDIDAE

Cheiridium museorum (Leach, 1817)

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1963).

England: Leicester, The Newarke, from nest of feral pigeon (Jones, 1975).

Finland: Aland (? Tvärminne or Helsingfors) (Nordberg, 1936).

Germany: Rheinland-Westfalen, Peppenhoven am Vorgebirge; Morenhoven am Vorgebirge, in einem Taubenschlag (Ellingsen, 1911; Beier, 1948).

[Undetermined species]

Brazil: Amazonas, Manaus, VII/XI-2005, 3 ex. [INPA] in nest # 5, 4 ex.

[INPA] in nest # 8 from a total of 14 examined nests, 0.28% of total arthropods (Ogawa, 2008).

CHELIFERIDAE

Chelifer cancroides cancroides (Linnaeus, 1758)

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1963, 1983).

England: abundant in some pigeons' nests (Woodroffe, 1953).

Finland: Aland (? Tvärminne or Helsingfors) (Nordberg, 1936).

Germany: Rheinland-Westfalen, Peppenhoven am Vorgebirge, in einem Taubenschlag (Ellingsen, 1911; Beier, 1948).

Sweden: (Lohmander, 1939; Beier, 1948).

CHERNETIDAE

Dinocheirus panzeri (C. L. Koch, 1837)

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1983).

Ireland: Portaferry, County Down, pigeon's nest in an old tower (Legg & O'Connor, 1997; Jones, 1975).

Columba oenas Linnaeus, 1758

CHELIFERIDAE

Chelifer cancroides cancroides (Linnaeus, 1758)

Finland: Aland (? Tvärminne or Helsingfors) (Nordberg, 1936).

Dactylochelifer latreillei (Leach, 1817)

Finland: Aland (? Tvärminne or Helsingfors) (Nordberg, 1936; Křištofik *et al.*, 1993, 2002) (mis-identified, see *Chernes cimicoides*).

CHERNETIDAE

Chernes cimicoides (Fabricius, 1793) and *Dinocheirus panzeri* (C. L. Koch, 1837)

Finland: Aland (? Tvärminne or Helsingfors) (Nordberg, 1936). The samples determined as *D. latreillei* consist of individuals of two other species, *Chernes cimicoides* and *Toxochernes* (= *Dinocheirus*) *panzeri* (Kaisila, 1949).

CORACIIDAE

Coracias garrulus Linnaeus, 1758

CHERNETIDAE

Allochernes wideri (C. L. Koch, 1843)

Slovakia (and/or Austria-Czech Republic) (Christophoryova & Krumpalova, 2010).

CORVIDAE

Corvus corone corone Linnaeus, 1758

CHERNETIDAE

Chernes hahnii L. Koch, 1873

France: Haute-Savoie, Bossy-sur-Frangy, nid, 6-V-1972, leg. J. Steffen,
1 ♂, det. V. Mahnert.

Pselaphochernes anachoreta (Simon, 1878)

France: Haute-Savoie, Bossy-sur-Frangy, nid, 6-V-1972, leg. J. Steffen,
1 ♀, det. V. Mahnert.

NEOBISIIDAE

Neobisium (Neobisium) sylvaticum (C. L. Koch, 1835)

Austria: Lower Austria, Scheibbs Distr. (Ressler & Beier, 1958; Ressler 1983).

Note: Records of *Chelifer cancroides*, *Allochernes wideri* and *Dinocheirus panzeri* from nests of *Corvus corone* by Ressler (1963) were apparently due to a typographical error, and concern the occurrence in nests of *Sturnus vulgaris*. They were implicitly corrected by Ressler (1983).

Corvus monedula Linnaeus, 1758 (= *Colaeus monedula*: Nordberg 1936).

CHEIRIDIIDAE

Cheiridium museorum (Lach, 1817)

United Kingdom: Wales, Ceredigion, in a jackdaw's nest in the lofts (Chater,
1989).

CHELIFERIDAE

Chelifer cancroides cancroides (Linnaeus, 1758)

Finland: Åland (? Tvärminne or Helsingfors) (Nordberg, 1936).

CHERNETIDAE

Allochernes wideri (C. L. Koch, 1843)

Germany: Hessen, Wiesbaden, Biebricher Schlosspark, nest in broken
Populus alba (Helversen, 1966).

Anthrenochernes stellae Lohmander, 1939

Sweden: Blekinge, probably nest of *C. monedula* (Gärdenfors & Wilander,
1995).

Dinocheirus panzeri (C. L. Koch, 1837) (= *Toxochernes panzeri* (C. L. Koch);
= *Chernes rufeolus* (Simon): Helversen, 1966).

Germany: Hessen, Wiesbaden, Biebricher Schlosspark, nest in broken
Populus alba (Helversen, 1966).

Sweden: Skane, Torna Hällestad; Östergötland, Alvastra (Lohmander, 1939;
Beier, 1948); probably nest of *C. monedula* (Gärdenfors & Wilander,
1995).

Pselaphochernes scorpioides (Hermann, 1804)

England: Berkshire, Wytham Wood, Jackdaw's nest at 15 ft in an oak tree
(Jones, 1975, 1978).

Pica hudsonia Sabine, 1823 (= *Pica pica hudsonicus* Sabine: Chamberlin, 1935).

CHERNETIDAE

Hesperochernes montanus Chamberlin, 1935

USA: Montana, Bitterroot Valley, 1931, "one pseudoscorpion that has been determined as *Hesperochnes montanus* new species by J. C. Chamberlin who is describing this arachnid elsewhere" (Jellison & Philip, 1933), Ravally County, Girds Creek, 30-V-1931, W. L. Jellison leg., 1♂, # JC-796.01001, in a bird's nest (Chamberlin, 1935; Beier, 1948).

EMBERIZIDAE

Emberiza citrinella Linnaeus, 1758

CHTHONIIDAE

Chthonius (Ephippiochthonius) fuscimanus Simon, 1900 (= *Chthonius austriacus*: Ressler, 1963).

Austria: Lower Austria, Scheibbs Distr., Purgstall (Ressler, 1963, 1983).

CHELIFERIDAE

Dactylochelifer latreillei latreillei (Leach, 1817)

Austria: Lower Austria, Scheibbs Distr. (Ressler & Beier, 1958; Ressler, 1963, 1983).

NEOBISIIDAE

Neobisium (Neobisium) carcinoides (Hermann, 1804)

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1983).

Neobisium sp.

Slovakia: (Fenda *et al.*, 1998).

ESTRILDIDAE

Lonchura maja (Linnaeus, 1766)

GEOGARYPIDAE

Geogarypus longidigitatus (Rainbow, 1897) (= *Geogarypus elegans audyi* Beier, 1952: Beier, 1963a).

Malaysia: Selangor, Rantau Panjang, 8 km N of Klang, 15-III-1961, 1 tritonymph, nest 54, B.53085 (Beier, 1963a).

Lonchura malacca (Sykes, 1832)

GEOGARYPIDAE

Geogarypus longidigitatus (Rainbow, 1897) (= *Geogarypus elegans audyi* Beier, 1952: Beier, 1963a).

Malaysia: Selangor, Rantau Panjang, 8 km N of Klang, 18-I-1961, 1 D, 1 T, 3♂, 1♀, nest 13, B.52897; 31-V-1961, 1♀, nest 166, B.53259; 14-VI-1961, 2♂, nest 192, B.53341 (Beier, 1963a).

Lonchura punctulata (Linnaeus, 1758)

GEOGARYPIDAE

Geogarypus longidigitatus (Rainbow, 1897) (= *Geogarypus elegans audyi* Beier, 1952: Beier, 1963a).

Malaysia: Selangor, Rantau Panjang, 8 km N of Klang, 18-X-1961, 1 gravid ♀, nest 250, B.53576 (Beier, 1963a).

FORMICARIIDAE

Formicariidae sp. 2

OLPIIDAE

Pachyolpium irmgardae Mahnert, 1979

Brazil: Amazonas, Municipios Silves & Itacotiara, Mil Madereira Itacotiara Ltda., 3°00'S, 58°40' W, VII/XII-2000, 1 nymph (Torres, 2001).

FRINGILLIDAE

Fringilla coelebs Linnaeus, 1758

CHEIRIDIIDAE

Cheiridium museorum (Leach, 1817)

Europe: (Roewer, 1937; Beier, 1948).

CHELIFERIDAE

Chelifer cancroides cancroides (Linnaeus, 1758)

Finland: Arland (? Tvärminne or Helsingfors) (Nordberg, 1936; Kaisila, 1949).

FURNARIIDAE

Anumbius annumbi (Vieillot, 1817)

CHERNETIDAE

Parachernes cf. *pulcher* Mahnert, 1979

Argentina: Córdoba, Dto Unión, Bell Ville (Grimaldi *et al.*, 2006).

Parazaona bucheri Beier, 1967

Argentina: Santa Fe, near Santa Fe City, in a nest superimposed to a nest of *Phacellodomus ruber* (Vieillot, 1817) [Aves: Furnariidae] (Turienzo *et al.*, 2008).

WITHIIDAE

Victorwithius proximus (Ellingsen, 1905)

Argentina: Buenos Aires [Campo de Mayo] (Turienzo *et al.*, 2008).

Phacellodomus ruber (Vieillot, 1817)

CHERNETIDAE

Parazaona bucheri Beier, 1967

Argentina: Santa Fe, near Santa Fe City (Turienzo *et al.*, 2008).

Phacellodomus rufifrons inornatus Ridgway, 1887

CHERNETIDAE

Calidiochernes musculi Beier, 1957

Venezuela: "Alta Gracia de Oviteno", det. M. Beier, in nest, hand-written note by M. Beier in his private copy of Beier, 1957a: 138.

MONOSPHYRONIDA

undetermined species

Colombia: Department of Meta, El Porvenir, 4°45'N, 71°25'W, in 22 examined nests (Barreto *et al.*, 1984).

UNDETERMINED FAMILY

Undetermined species (= "*Chelifer* sp.": Pifano, 1938).

Venezuela: Estado Yaracuy, Distrito San Felipe, Carretera San Javier - Marín, II-1938, Anduze & Pifano leg., in company of Coleoptera and *Psammostes arthuri* (Pinto) [Hemiptera: Reduviidae] (Pifano, 1938; Carcavallo *et al.*, 1975).

Phacellodomus rufifrons rufifrons (Wied-Neuwied, 1821)

PSEUDOSCORPIONES, undetermined species

Brazil: Goiás (Silva & Lustosa, 1993).

Phacellodomus rufifrons sincipitalis Cabanis, 1883

PSEUDOSCORPIONES, undetermined species

Brazil: (Lent, 1939); Pernambuco, March to June 1970, 344 ex. [LZPb], from a total of 28 nests (Lins Duarte, 1978).

Phacellodomus sp.

CHERNETIDAE

Parachernes argentinus Beier, 1967

Argentina: Tucumán, La Soledad, near Cañete, 1965-1966, identified by Beier (Bucher, 1974).

Parazaona bucheri Beier, 1967

Argentina: Tucumán, Tapia-Raco, identified by Beier (Bucher, 1974).

Note: *P. argentinus* and *P. bucheri* were described by Beier (1967) on specimens collected by Bucher in 1966 and sent to Beier for identification. Bucher (1974) specified that the specimens had been collected from nests of *Phacellodomus*, information probably unknown to Max Beier.

HALCYONIDAE

Halcyon pileata (Boddaert, 1783)

CHEIRIDIIDAE

Apocheiridium minutissimum Beier, 1964

Malaysia: Subang, 12-XII-1962, H. E. McClure leg., ♀ holotype [BISHOP 3603], Ser. No. M-02066, Band No. H. 87082, in nest (Beier, 1964).

HIRUNDINIDAE

Delichon urbica (Linnaeus, 1758)

CHEIRIDIIDAE

Cheiridium museorum (Leach, 1817)

Austria: Lower Austria, Scheibbs Distr., Purgstall (Ressl, 1963, 1983).

Scotland: near Rannoch, Perthshire, in nest of house martin (Jones, 1975, 1978).

CHELIFERIDAE

Chelifer cancroides cancroides (Linnaeus, 1758)

Austria: Lower Austria, 1862, Ferrari leg., "aus einem Schwalbennest" (Beier, 1929a); under *Hirundo rustica* and *Delichon urbica* (Beier, 1948); Scheibbs Distr. (Ressl, 1963 1983).

Finland: Aland (? Tvärminne or Helsingfors) (Nordberg, 1936).

Sweden: Östergötland, Lake Täkern, leg. V. A. Engholm (Lohmander, 1939; Beier, 1948).

Switzerland: (Lessert, 1911; Beier, 1948); canton of Vaud, Commugny, 1964/1966, in nests, leg. J. Steffen, 5 ♂, 10 ♀, 1 trito-, 3 deutonymphs, det. V. Mahnert.

Chelifer cancroides orientalis Morikawa, 1954

Japan: Nagano Prefecture, Agematsu Town, 17-XI-1967, in 8 examined nests (Uchikawa, 1970).

Dactylochelifer latreillei latreillei (Leach, 1817)

Finland: Aland (? Tvärminne or Helsingfors) (Nordberg, 1936; Křištofik et al., 1993) (mis-identified, see *Chernes cimicoides*).

CHERNETIDAE

Chernes cimicoides (Fabricius, 1793) and *Dinocheirus panzeri* (C. L. Koch, 1837)

Finland: Aland (? Tvärminne or Helsingfors) (Nordberg, 1936). The samples determined as *D. latreillei* consist of individuals of two other species, *Chernes cimicoides* and *Toxochernes (=Dinocheirus) panzeri* (Kaisila, 1949).

CHTHONIIDAE

Chthonius (Chthonius) ischnocheles (Hermann, 1804)

England: Churcham, Gloucestershire (Jones, 1975).

Delichon urbica (Linnaeus, 1758) + *Passer domesticus* (Linnaeus, 1758)

CHEIRIDIIDAE

Cheiridium museorum (Leach, 1817)

England: Ashleworth, Gloucestershire, in nest of house martin, later occupied by sparrow (Jones, 1975, 1978).

Hirundo rustica (Linnaeus, 1758)

CHEIRIDIIDAE

Cheiridium museorum (Leach, 1817)

Europe (?): (Roewer, 1937; Beier, 1948).

CHELIFERIDAE

Chelifer cancroides cancroides (Linnaeus, 1758)

Austria: Lower Austria, Dornbach bei Wien, 1862, Ferrari leg., "aus einem Schwalbennest" (Beier, 1929a); "*Hirundo rustica*" (Beier, 1948); Scheibbs Distr. (Ressl & Beier, 1958; Ressler 1963, 1983).

Finland: Aland (? Tvärminne or Helsingfors) (Nordberg, 1936).

France: Haute-Savoie, Bossy-sur-Frangy, 450m, in nests in stable and kitchen of farmstead, 1969-1980, leg. J. Steffen, det. V. Mahnert.

Germany: Hessen, Naturpark Hoher Vogelsberg, Ilbeshausen (Jost, 1982).

Sweden: (Lohmander, 1939).

Switzerland: (Lessert, 1911; Beier, 1948); canton of Vaud, Commugny, in nest, 8-VII-1962, leg. J. Steffen, 3 ♂, 1 ♀, det. Mahnert.

USA: Oregon, Lane Co., 2.5 mi N of Cheshire, 4-XII-1971, leg. E. M. Benedict, 5 nymphs, 5♂, 4♀ [EMB], hay, mouse and barn swallow nests in old sheep shed (Benedict & Malcolm, 1979).

Dactylochelifer latreillei latreillei (Leach, 1817)

Finland: Åland (? Tvärminne or Helsingfors) (Nordberg, 1936; Krištofik *et al.*, 1993, 2002) (mis-identified, see *Chernes cimicoides*).

CHERNETIDAE

Allochernes powelli (Kew, 1916)

Germany: Hessen, Naturpark Hoher Vogelsberg, Ilbeshausen (Jost, 1982).

Chernes cimicoides (Fabricius, 1793) and *Dinocheirus panzeri* (C. L. Koch, 1837).

Finland: Åland (? Tvärminne or Helsingfors) (Nordberg 1936). Samples identified by Nordberg as *D. latreillei* consist of individuals of two other species, *Chernes cimicoides* and *Toxochernes (=Dinocheirus) panzeri* (Kaisila, 1949).

Dinocheirus panzeri (C. L. Koch, 1837) (= *Toxochernes panzeri* (C. L. Koch, 1837)).

Austria: Dornbach bei Wien, in einem Schwalbennest (Beier, 1929a); nest of *Hirundo rustica* (Beier, 1948).

Progne subis (Linnaeus, 1758) + *Passer domesticus* (Linnaeus, 1758)

CHELIFERIDAE

Chelifer sp.

USA: Wisconsin, near Madison, 26-X-1962, 15 adults in a Purple Martin house occupied by House Sparrows (Thompson, 1966).

Riparia riparia Linnaeus, 1758 (= bank swallows: Muchmore, 1981).

CHERNETIDAE

Lamprochernes sp.

Slovakia: Chotín, 5 February 1990, 1 deutonymph (Krištofik *et al.*, 1994).

LARCIDAE

Larca notha Hoff, 1961

Canada: Saskatchewan, Val Marie, 10-VI-1955, J. R. Vockeroth leg., 1 deutonymph, 3 tritonymphs, 3♂, 2♀ [CNCL], from the nest (Muchmore, 1981).

NEOBISIIDAE

Neobisium sp.

Slovakia: (Fenda *et al.*, 1998).

Undetermined sp. (= "swallow's nest": Hoff, 1957).

CHEIRIDIIDAE

Cheiridium museorum (Leach, 1817)

United Kingdom: Wales, Ceredigion, in two swallow nests (Chater, 1989).

CHERNETIDAE

Tejachernes stercoreus (Turk, 1949)

USA: Texas, Uvalde County, Frio Cave, from swallow nest constructed from mud at cave entrance (Hoff, 1957).

ICTERIDAE

Psarocolius decumanus (Pallas, 1769)

CHERNETIDAE

Rhopalochernes sp.

Brazil: Amazonas, Municipios Silves & Itacotiara, Mil Madereira Itacotiara Ltda., 3°00'S, 58°40'W, VII/XII-2000, 4 nymphs, 9 adults in nest # 59, 21 nymphs, 21 adults in nest # 60, 84 nymphs, 19 adults in nest # 61, 17 nymphs, 23 adults in nest # 62, 13 nymphs, 18 adults in nest # 63, 35 nymphs, 13 adults in nest # 64, 7 nymphs, 5 adults in nest # 65 of a total of 7 examined nests [Colony 2] (Torres, 2001).

LANIIDAE

Lanius collaris Linnaeus, 1766

WITHIIDAE

Stenowitzius bayoni (Ellingsen, 1910)

South Africa: Cape Province, King William's Town Div., Pirie, in the nest of the Fiscal Shrike (Ellingsen, 1912; Beier, 1948).

Lanius collurio collurio Linnaeus, 1758

CHELIFERIDAE

Dactylochelifer latreillei latreillei (Leach, 1817)

Slovakia: Vysoká pri Morave, 2-VIII-1993, 1♂; Lehnice, 15-VII-1993, 1♀; Gabčíkovo, 19-VII-1994, 1 tritonymph, 3♂, 1♀; Ipelské Predmostie, 21-VII-1994, 1♂, 1♀ (Krištofik *et al.*, 2002).

NEOBISIIDAE

Neobisium (Neobisium) sylvaticum (C. L. Koch, 1835)

Slovakia: Očová, 6-VII-1993, 1 tritonymph, 1♀ (Krištofik *et al.*, 2002).

Lanius minor minor Gmelin, 1788

CHERNETIDAE

Chernes cimicoides (Fabricius, 1793)

Slovakia: Detva, settlement of Latok, 19-VII-1996, 1♀ (Krištofik *et al.*, 2002).

Dinocheirus panzeri (C. L. Koch, 1837)

Slovakia: Holic, 5-VII-1994, 3 tritonymphs, 1♂, 2♀ (Krištofik *et al.*, 2002).

LARIDAE

Larus delawarensis Ord, 1815

PSEUDOSCORPIONES, undetermined species

Canada: Lake Superior, Black Bay, Granite Island, 48°43'N, 88°29'W, 9-V-1983 through 29-VI-1983, 5 specimens out of a total of 40 collected gull nests (Ryder & Freitag, 1974).

Larus ridibundus Linnaeus, 1766

CHELIFERIDAE

Chelifer cancroides cancroides (Linnaeus, 1758)

Sweden: Lake Takern, Östergötland (Lohmander, 1939; Beier, 1948).

MEROPIDAE

Merops apiaster Linnaeus, 1758

CHERNETIDAE

Chernes hahnii (C. L. Koch, 1839)

Slovakia: Chotín, 48°11'N, 18°14'E, 22-VIII-1991, 1♂ in one of 9 examined nests (Krištofik *et al.*, 1996).

Lamprochernes nodosus (Schrank, 1761)

Slovakia: Jarovce, 47°14'N, 17°06'W, 16-VIII-1993, 1♀ in one of 21 examined nests (Krištofik *et al.*, 1996).

MOTACILLIDAE

Anthus trivialis (Linnaeus, 1758)

NEOBISIIDAE

Neobisium sp.

Slovakia: (Fenda *et al.*, 1998).

Motacilla alba Linnaeus, 1758

CHEIRIDIIDAE

Cheiridium museorum (Leach, 1817)

Slovakia (and/or Austria-Czech Republic): (Christophoryova & Krumpalova, 2010).

MUSCICAPIDAE

Ficedula albicollis (Temminck, 1815)

CHTHONIIDAE

Chthonius sp.

Slovakia: (Fenda *et al.*, 1998).

NEOBISIIDAE

Neobisium sp.

Slovakia: (Fenda *et al.*, 1998).

PSEUDOSCORPIONES

Slovakia (and/or Austria-Czech Republic): (Christophoryova & Krumpalova, 2010).

Ficedula hypoleuca (Pallas, 1764)

CHERNETIDAE

Allochernes wideri (C. L. Koch, 1843)

Finland: Korppoo (V), in a nesting box, where *Muscicapa hypoleuca* had been nesting previously, but where bats were living when the nest was investigated (Kaisila, 1949).

NECTARINIIDAE

Anthreptes malacensis (Scopoli, 1786)

GEOGARYPIDAE

Geogarypus longidigitatus (Rainbow, 1897) (= *Geogarypus elegans audyi* Beier, 1952; Beier, 1963a).

Malaysia: Selangor, Rantau Panjang, 8 km N of Klang, 7-VI-1961, 1 deutonymph, in nest 178 (Beier, 1963a).

PANURIDAE

Panurus biarmicus (Linnaeus, 1758)

CHERNETIDAE

Lamprochernes nodosus (Schrank, 1803)

Italy: Po River delta, Argenta, 44°41'N, 11°50'E, 1♂, 1♀; Campotto, 44°42'N, 11°50'E, 1♀ (Krištofik *et al.*, 2007).

PARIDAE

Parus caeruleus (Linnaeus, 1758)

CHERNETIDAE

Allochernes wideri (C. L. Koch, 1843)

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1963, 1983).

Chernes hahnii (C. L. Koch, 1839)

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1983).

Parus major Linnaeus, 1758

CHERNETIDAE

Allochernes wideri (C. L. Koch, 1843)

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1983).

Dinocheirus panzeri (C. L. Koch, 1837)

England: Churchdown, Gloucestershire (George, 1961; Jones, 1975, 1978).

CHTHONIIDAE

Mundochthonius styriacus Beier, 1971

Austria: Styria, Pöls bei Zwaring, 20 km S of Graz, in nest 3.5 m above ground (Beier, 1971; Jost, 1982).

Parus montanus (Conrad von Baldenstein, 1827)

CHELIFERIDAE

Dactylochelifer latreillei latreillei (Leach, 1817)

Finland: Aland (? Tvärminne or Helsingfors) (Nordberg, 1936; Krištofik *et al.*, 1993) (mis-identified, see *Chernes cimicoides*).

CHERNETIDAE

Chernes cimicoides (Fabricius, 1793) and *Dinocheirus panzeri* (C. L. Koch, 1837)

Finland: Aland (? Tvärminne or Helsingfors) (Nordberg, 1936). Samples identified by Nordberg as *D. latreillei* consist of individuals of two other species, *Chernes cimicoides* and *Toxochernes* (= *Dinocheirus*) *panzeri* (Kaisila, 1949).

PASSERIDAE

Passer domesticus (Linnaeus, 1758)

CHEIRIDIIDAE

Apocheiridium indicum Murthy & Ananthakrishnan, 1977

India: West Bengal, 1984-1985, from a total of 192 nests (Bhattacharyya, 1990a, b, 1999).

Cheiridium museorum (Leach, 1817)

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1963, 1983).

England: Kirton-in-Kindsey, Lincolnshire, in deserted sparrow nest (Pickard-Cambridge, 1892); Churchdown, Gloucestershire; Woodwalton Fen N.N.R., Hunts. (Jones, 1975, 1978).

Finland: Aland (? Tvärminne or Helsingfors) (Nordberg, 1936).

India: West Bengal, 1984-1985, from a total of 192 nests (Bhattacharyya, 1990a, 1999).

Switzerland: (Lessert, 1911; Beier, 1948).

CHELIFERIDAE

Chelifer cancroides cancroides (Linnaeus, 1758)

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1963, 1983).

France: Haute-Savoie, Bossy-sur-Frangy, 450m, nest in farm stable, VI-1969, leg. J. Steffen, 2♂, 7♀, 6 tritonymphs, 1 deutonymph, det. V. Mahnert.

Sweden: (Lohmander, 1939; Beier, 1948).

Switzerland: (Lessert, 1911; Beier, 1948); Geneva City, Natural History Museum, 2♂, 2♀, 1983/1993, from nests, det. V. Mahnert.

Chelifer sp.

India: West Bengal, 1984-1985, from a total of 192 nests (Bhattacharyya, 1990a, 1999).

CHERNETIDAE

Chernes sp.

India: West Bengal, 1984-1985, from a total of 192 nests (Bhattacharyya, 1990a, 1999).

Pselaphochernes scorpioides (Hermann, 1804)

Germany: "Ostdeutschland", in nest of house sparrow (Drogla & Lippold, 2004).

CHTHONIIDAE

Chthonius (Chthonius) rhodochelatus Hadzi, 1933

France: Haute-Savoie, Bossy-sur-Frangy, 450 m, in nest fallen from a tree, 22-X-1972, leg. J. Steffen, 1♀, det. V. Mahnert.

Tyrannochthonius heterodentatus Beier, 1930 (= *Tyrannochthonius madrasensis* Murthy, 1961; Bhattacharyya, 1990a, 1999).

India: West Bengal, 1984-1985, from a total of 192 nests (Bhattacharyya, 1990a, 1999).

OLPIIDAE

Indolpium loyolae (Murthy, 1961) (= *Minniza loyolae*: Bhattacharyya, 1990a, 1999).

India: West Bengal, 1984-1985, from a total of 192 nests (Bhattacharyya, 1990a, 1999).

Passer montanus (Linnaeus, 1758)

CHERNETIDAE

Allochernes wideri (C. L. Koch, 1843)

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1963, 1983).

Dendrochernes cyrneus (L. Koch, 1873)

Slovakia (and/or Austria-Czech Republic): (Christophoryova & Krunmpalova, 2010).

Prunella modularis (Linnaeus, 1758)

CHEIRIDIIDAE

Cheiridium museorum (Leach, 1817)

Austria: Tirol, Ötztaler Alpen, Obergurgl, 2000 m (Thaler, 1979).

PASSERIFORMES, undetermined genera and species

ATEMNIDAE

Paratemnoides nidificator (Balzan, 1888) (= *Paratemnoides minor* (Balzan): Torres, 2001)

Brazil: Amazonas: Municipios Silves & Itacotiara, Mil Madereira Itacotiara Ltda., 3°00'S, 58°40'W, VII/XII-2000, 1 nymph in nest # 4 (Torres, 2001).

CHERNETIDAE

Allochernes wideri (C. L. Koch, 1843)

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1983).

Allochernes powelli (Kew, 1916)

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1983).

Dinocheirus panzeri (C. L. Koch, 1837)

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1983).

Chernes hahnii (C. L. Koch, 1839)

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1983).

CHELIFERIDAE

Dactylochelifer latreillei latreillei (Leach, 1817)

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1983).

CHTHONIIDAE

Chthonius (Ephippiochthonius) tetrachelatus (Preyssler, 1790)

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1983).

Chthonius (Ephippiochthonius) fuscimanus Simon, 1900 (= *Chthonius (E.) austriacus*: Ressler, 1983).

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1983).

Pseudochthonius homodontatus Chamberlin, 1929

Brazil: Amazonas, Municipios Silves & Itacotiara, Mil Madereira Itacotiara Ltda., 3°00'S, 58°40'W, VII/XII-2000, 1 ♀ in nest # 20 (Torres, 2001).

SYARINIDAE

Ideobisium sp.

Brazil: Amazonas, Municipios Silves & Itacotiara, Mil Madereira Itacotiara Ltda., 3°00'S, 58°40'W, VII/XII-2000, 1 nymph, 1 ♂ in nest # 20 (Torres, 2001).

PHALACROCORACIDAE

Phalacrocorax aristotelis (Linnaeus, 1761)

CHELIFERIDAE

Rhacochelifer maculatus (L. Koch, 1873)

France: Corsica. Îles Lavezzi, Rattino, VI.1983, leg. C. Guiguen, 2 ♀, det. V. Mahnert.

OLPIIDAE

Calocheiridius olivieri (Simon, 1879)

France: Corsica, Îles Lavezzi, Rattino, VI.1983, leg. C. Guiguen, 2 ♂, 2 ♀, det. V. Mahnert.

PHASIANIDAE

Gallus gallus (Linnaeus, 1758) (= *Gallus domesticus*: Ressler, 1963).

CHEIRIDIIDAE

Cheiridium museorum (Leach, 1817)

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1963, 1983).

United Kingdom: Wales, Ceredigion, in hen's nests of straw in an out-building (Chater, 1989).

CHELIFERIDAE

Chelifer cancroides cancroides (Linnaeus, 1758)

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1963, 1983).

USA: Illinois (Hoff 1944); Colorado: Weld County, 2 ♂, east of Latham Reservoir, SE of Greeley, in chicken house (Hoff, 1961).

Hansenius torulosus (Tullgren, 1907) (= *Chelifer kewi*: Ellingsen 1912).

South Africa: Cape Province: in a hen-house (Ellingsen, 1912).

CHERNETIDAE

Allochernes wideri (C. L. Koch, 1843)

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1963, 1983).

Dinocheirus panzeri (C. L. Koch, 1837)

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1963; 1983).

Dinocheirus sicarius Chamberlin, 1952

USA: Oregon, Lane Co., 5 mi N of Elmira (130 m), litter-dung of chicken house (Benedict & Malcolm, 1982).

Lamprochernes chyzeri (Tömösvary, 1882)

Switzerland: canton of Geneva, Avully, in chicken dung, 6-IX-1966, leg. Cl. Besuchet, 1 ♀, 1 trito-, 1 deutonymph, det. V. Mahnert.

Lamprochernes savignyi (Simon, 1881)

New Zealand: chicken coops (Beier, 1976).

South Africa: Medunsa, 30 km NW Pretoria, VI.1999, leg. Green, 1 ♂, 1 ♀, in chicken litter, det. V. Mahnert.

LARCIDAE

Larca lata (Hansen, 1884)

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1983).

WITHIIDAE

Withius indicus Murthy & Ananthkrishnan, 1977

India: Tamil Nadu, in chicken house (Murthy & Ananthkrishnan, 1977).

Withius kaestneri (Vachon, 1937)

South Africa: Cape Province, Albany Distr., 33°32'S, 26°34'W, 10.V.1979 D. Gautier leg., 12 ♂, 6 ♀, in chicken dung, det. V. Mahnert (published by Hulley, 1983); in manure samples from poultry farms in Albany Distr. (33°32'S, 26°34'E), Bathurst Distr. (33°34'S, 26°43'S), Ciskei (33°24'E, 27°08'E), East London (32°53'S, 27°53'E), and Port Elizabeth (33°54'S, 25°09'E) (Hulley, 1983).

Withius piger (Simon, 1878) (= *Withius subruber*: Beier, 1976; = *Whitius piger*: Pinto *et al.*, 2005).

Brazil: Rio Grande do Sul: Pelotas, in poultry farm (Pinto *et al.*, 2005).

New Zealand: Auckland, Kumeu, in chicken manure, sample # 75/144 (Beier, 1976).

PSEUDOSCORPIONES

USA: California, Sonoma County, in poultry manure (Peck & Anderson, 1969); California, Riverside County, in caged layer poultry manure (Wills *et al.*, 1990); Florida, Putnam Co., in poultry manure (Propp & Morgan, 1985).

Polyprectrom inopinatum (Rothschild, 1903)

CHEIRIDIIDAE

Apocheiridium minutissimum Beier, 1964

Malaysia: Pahang, Fraser's Hill, 26-III-1957, 1 ♂ (torso) paratype, Ser. No. M-02117, Band No. H. 87082, in nest of Rothchild's Peacock Pheasant (Beier, 1964).

PICIDAE

Colaptes auratus cafer (Gmelin, 1788) (= *Colaptes cafer*: Hoff, 1961).

CHERNETIDAE

Acuminochernes tacitus Hoff, 1961

USA: Colorado, Larimer County, 2.5 miles east of Fort Collins, at about 5000 feet in elevation (Hoff, 1961).

Dendrocopus medius (Linnaeus, 1758)

CHERNETIDAE

Allochernes wideri (C. L. Koch, 1843)

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1963, 1983).

Dryocopus martius (Linnaeus, 1758)

CHELIFERIDAE

Chelifer cancroides cancroides (Linnaeus, 1758)

Finland: Aland (? Tvärminne or Helsingfors) (Nordberg, 1936).

Picoides borealis Vieillot, 1809

PSEUDOSCORPIONES, unidentified species

USA: Georgia, Fort Stewart Military Reservation, 1997-1998, 7% of all cavities or 15% of natural cavities of a total of 42 examined cavities [20 natural cavities, 22 insert cavities] (Pung *et al.*, 2000).

PROCELLARIIDAE

Calonectris diomedea (Scopoli, 1796)

CHERNETIDAE

Pselaphochernes lacertosus (L. Koch, 1873)

Portugal: Islas Selvagem, Selvagem Grande, 1984, P. D. Gabbutt leg., 7♂, 7♀ 5 tritonymphs, in nests, det. V. Mahnert.

Pachyptila turtur Kuhl, 1820

CHERNETIDAE

Apatochernes antarcticus pterodromae Beier, 1964

New Zealand: Auckland Is. (Ocean I.), Stewart I. (Motunau I.) (Beier, 1976).

Procellaria westlandica (Falla, 1946)

CHERNETIDAE

Apatochernes nestoris Beier, 1962

New Zealand: North I., Bay of Plenty (Whale I.); South I., Westland (Nelson Creek, Barrytown, Murrays Mistake; Open Bay Is.); Stewart I. (Bench I.) (Beier, 1976).

Pterodroma externa externa (Salvin, 1875)

CHERNETIDAE

Chelanops skottsbergi (Beier, 1957) (= *Stigmachernes skottsbergi*: Beier, 1957b).

Chile: Juan Fernandez Is., Masafuera, probably in phagophily within the birds' colonies (Beier, 1957b).

Pterodroma macroptera (A. Smith, 1840)

CHERNETIDAE

Apatochernes nestoris Beier, 1962

New Zealand: North I., Bay of Plenty (Whale I.); South I., Westland (Nelson Creek, Barrytown, Murrays Mistake; Open Bay Is.); Stewart I. (Bench I.) (Beier, 1976).

Pterodroma lessoni (Garnot, 1826)

CHERNETIDAE

Apatochernes antarcticus pterodromae Beier, 1964

New Zealand: Auckland Is (Ocean I.), Stewart I. (Motunau I.) (Beier, 1976).

Puffinus griseus (Gmelin, 1789)

CHERNETIDAE

Apatochernes nestoris Beier, 1962

New Zealand: North I., Bay of Plenty (Whale I.); South I., Westland (Nelson Creek, Barrytown, Murrays Mistake; Open Bay Is.); Stewart I. (Bench I.) (Beier, 1976).

PSITTACIDAE

Anodorhynchus hyacinthinus (Latham, 1790)

PSEUDOSCORPIONES, unidentified species

Brazil: Mato Grosso do Sul, Pantanal de Miranda, 1 ex. in a natural nest (Dutra de Carvalho *et al.*, 2005).*Myiopsitta monachus monachus* (Boddaert, 1783)

CHERNETIDAE

Parazaona bucheri Beier, 1967Argentina: Santa Fe, near Santa Fe City (Turienzo *et al.*, 2008).*Parazaona morenensis* (Tullgren, 1908)Argentina: Santa Fe, near Santa Fe City (Turienzo *et al.*, 2008).

PSEUDOSCORPIONES, undetermined species

Argentina: Buenos Aires, without detailed localities, from a total of 43 beds of fresh vegetal matter and one communal nest (Aramburú *et al.*, 2009).*Nestor meridionalis* (Gmelin, 1788)

CHERNETIDAE

Apatochernes nestoris Beier, 1962

New Zealand: North I., Bay of Plenty (Whale I.); South I., Westland (Nelson Creek, Barrytown, Murrays Mistake; Open Bay Is.); Stewart I. (Bench I.) (Beier, 1976).

PYCNONOTIDAE

Iole olivacea Blyth, 1844 (= *Microscelis olivacea*: Beier, 1963).

CHERNETIDAE

Sundochernes malayanus Beier, 1963

Malaysia: Selangor, Rantau Panjang, 5 mi N of Klang, 28-VI-1961, 1 ♂ holotype [BISHOP 3465], nest 191, B.53365 (Beier, 1963).

GEOGARYPIDAE

Geogarypus albus Beier, 1963

Malaysia: Selangor, Rantau Panjang, 5 mi N of Klang: 22-II-1961, 1 ♂ paratype, nest 69, B.53013; 14-VI-1961, 1 deutonymph, paratype, nest 193, B.53338 (Beier, 1963).

Pycnonotus goiavier (Scopoli, 1786)

ATEMNIDAE

Anatemnus orites major Beier, 1963

Malaysia: Selangor: Rantau Panjang, 5 mi N of Klang: 1960, 1 ♀, nest 26; 29-III-1961, 2 ♀, nest 110, B.53105; 19-IV-1961, 1 deutonymph, 1 tritonymph, 1 ♀, nest 146, B.53150 (Beier, 1963).

CHERNETIDAE

Sundochernes malayanus Beier, 1963

Malaysia: Selangor, Rantau Panjang, 5 mi N of Klang, 7-VI-1961, 1 tritonymph paratype, nest 182 (Beier, 1963).

GEOGARYPIDAE

Geogarypus longidigitatus (Rainbow, 1897) (= *Geogarypus elegans audyi* Beier, 1952: Beier, 1963).

Malaysia: Selangor, Rantau Panjang, 8 km N of Klang: 11-I-1961, 1 ♂, nest 8; 2-II-1961, 1 ♂, nest 50, B.52939; 5-II-1961, 1 deutonymph, nest 44, 1961-249; 9-II-1961, 2 ♀, nest 64; 22-II-1961, 1 protonymph, nest 56, B.53011; 22-II-1961, 1 ♀ (juvenile), nest 58, B.53014; 1-III-1971, 1 deutonymph, 1 tritonymph, nest 70, B.53046; 15-III-1961, 1 tritonymph, 1 ♂, nest 104, B.53080; 29-III-1961, 1 ♀ (gravid), nest 112, B.53104; 13-IV-1961, 1 tritonymph, 1 ♂, 1 ♀ (gravid), nest 142, B.53136; 7-VI-1961, 1 tritonymph, nest 197; 14-VI-1961, 1 ♂, 3 ♀, nest 190, B.53334; 14-VI-1961, 1 ♀, nest 200, B.53342; 14-VI-1961, 1 deutonymph, nest 204, B.53339; 21-VI-1961, 1 ♂, nest 212, B.53347; 21-VI-1961, 1 ♂, 1 ♀, nest 199, B.53348; 21-VI-1961, 1 ♀, nest 161, B.53349; 5-VII-1961, 2 ♂, 1 ♀, nest 225, B.53373; 26-VII-1961, 1 ♂, nest 235, B.53417 (Beier, 1963).

REMIZIDAE

Remiz pendulinus (Linnaeus, 1758)

CHEIRIDIIDAE

Cheiridium museorum (Leach, 1817) (= *Cheiridium museorum*: Krištofik *et al.*, 1995)

Slovakia: Dolny Stal, in nest with eggs (Krištofik *et al.*, 1995).

CHELIFERIDAE

Dactylochelifer latreillei latreillei (Leach, 1817)

Slovakia: Velké Blahovo, 1 ♂ in 19 examined nests (Krištofik *et al.*, 1993, 2002).

CHERNETIDAE

Lamprochernes nodosus (Schrank, 1803) (= *Laprochermes nodosus*: Krištofik *et al.*, 1995)

Slovakia: Jakubor, in nest with chicks (Krištofik *et al.*, 1995).

SITTIDAE

Sitta europeae Linnaeus, 1758

CHERNETIDAE

Allochernes wideri (C. L. Koch, 1843)

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1983).

STRIGIDAE

Aegolius funereus (Linnaeus, 1758)

CHELIFERIDAE

Chelifer cancroides cancroides (Linnaeus, 1758)

Slovakia: Chernovrší, area of Pec, 27-VII-1993, 1 ♂; Škamranka, area of Postřekov, 27-VII-1993, 1 tritonymph (Krištofik *et al.*, 2003).

CHERNETIDAE

Chernes cimicoides (Fabricius, 1793)

Slovakia: Velká Skála, area of Postřekov, 27-VII-1993, 1 ♂ 1 ♀ (Krištofik *et al.*, 2003).

Dinocheirus panzeri (C. L. Koch, 1837)

Slovakia: 2 ♀ (Krištofik *et al.*, 2003).

Otus asio (Linnaeus, 1758)

CHERNETIDAE

Acuminochernes crassopalpus (Hoff, 1945)

USA: New York, Siracuse, Oakwood Cemetery, 119 ex. in the material extracted from one nest (Philips & Dindal, 1990).

Dinocheirus panzeri (C. L. Koch, 1837)

Netherlands: Zuid-Holland, Meyendel, uit nest ransuil (Tooren, 2005).

Otus scops (Linnaeus, 1758)

CHERNETIDAE

Allochernes wideri (C. L. Koch, 1843)

Slovakia (and/or Austria-Czech Republic): (Christophoryova & Krumpalova, 2010).

Strix aluco Linnaeus, 1758

CHERNETIDAE

Allochernes wideri (C. L. Koch, 1843)

Slovakia (and/or Austria-Czech Republic): (Christophoryova & Krumpalova, 2010).

Strigidae sp.

CHERNETIDAE

Dinocheirus panzeri (C. L. Koch, 1837) (= *Chelifer panzeri*: Kew, 1911; = *Toxochernes panzeri*: Jones, 1978).

England: (Kew, 1911; Beier, 1948); Wickham, Kent, in an owl's nest (Jones, 1975, 1978).

STURNIDAE

Sturnus vulgaris Linnaeus, 1758

CHEIRIDIIDAE

Cheiridium museorum (Leach, 1817)

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1983).

Switzerland: (Lessert, 1911; Beier, 1932, 1948).

CHELIFERIDAE

Chelifer cancroides cancroides (Linnaeus, 1758)

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1983).

Finland: Åland (? Tvärminne or Helsingfors) (Nordberg, 1936).

Italy: S. Vito (Modena), Emilia, nei nidi de storni (Beier, 1929b, 1948).

New Zealand: Kaikoura, Wharekiri, Donegals Flat (Beier, 1976).

Sweden: (Lohmander, 1939; Beier, 1948).

CHERNETIDAE

Allochernes wideri (C. L. Koch, 1843)

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1983).

Chernes hahnii (C. L. Koch, 1839)

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1983).

Dinocheirus panzeri (C. L. Koch, 1837) (= *Chelifer panzeri*: Kew, 1911; = *Toxochernes panzeri*: Beier, 1948; Jones, 1975).

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1983).

England: (Kew, 1911; Beier 1948; Jones, 1975).

Sweden: (Lohmander, 1939; Beier, 1948).

NEOBISIIDAE

Neobisium (Neobisium) sylvaticum (C. L. Koch, 1835)

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1963).

Note: The record of this species is apparently due to a typographical error and has been implicitly corrected by Ressler (1983); it concerns nests of *Corvus corone*.

SYLVIIDAE

Acrocephalus palustris (Bechstein, 1798)

NEOBISIIDAE

Neobisium (Neobisium) inaequale Chamberlin, 1930

Slovakia: Malacky-Vinohrádky, 12-VI-2001, 1 ♀, in nest; 17-VI-2001, 1 ♀, in nest (Krištofik *et al.*, 2005).

Phylloscopus collybita (Vieillot, 1817)

NEOBISIIDAE

Neobisium (Neobisium) sylvaticum (C. L. Koch, 1835)

Austria: Tirol, Mutters near Innsbruck, 3-VI-1970, W. Gstader leg., 1 ♂, 3 ♀, V. Mahnert det.

Sylvia atricapilla (Linnaeus, 1758) (= *Parus atricapillus*: Nordberg, 1936).

CHELIFERIDAE

Chelifer cancroides cancroides (Linnaeus, 1758)

Finland: Åland (? Tvärminne or Helsingfors) (Nordberg, 1936).

Dactylochelifer latreillei latreillei (Leach, 1817)

Finland: Aland (? Tvärminne or Helsingfors) (Nordberg, 1936) (mis-identified, see *Chernes cimicoides*). Chernetidae

CHERNETIDAE

Chernes cimicoides (Fabricius, 1793) and *Dinocheirus panzeri* (C. L. Koch, 1837)

Finland: Aland (? Tvärminne or Helsingfors) (Nordberg, 1936). The samples determined as *D. latreillei* consist of individuals of two other species, *Chernes cimicoides* and *Toxochernes* (= *Dinocheirus*) *panzeri* (Kaisila, 1949).

Sylvia borin (Boddaert, 1783)

CHELIFERIDAE

Chelifer cancroides cancroides (Linnaeus, 1758)

Finland: Aland (? Tvärminne or Helsingfors) (Nordberg, 1936)

TETRAONIDAE

Tetrao urogallus Linnaeus, 1758

NEOBISIIDAE

Neobsium (*Neobisium*) *crassifemoratum* (Beier, 1928)

Slovakia: (Fenda *et al.*, 1998).

TROGLODYTIDAE

Troglodytes musculus Neumann, 1823

CHERNETIDAE

Calidiochernes musculi Beier, 1957

Venezuela: Llanos, nest of *Troglodytes musculus* ("cucaracharo") (Beier, 1957a).

Troglodytes troglodytes (Linnaeus, 1758)

NEOBISIIDAE

Neobisium (*Neobisium*) *carcinoides* (Hermann, 1804)

Slovakia: (Fenda *et al.*, 1998).

Thryothorus leucotis Lafresnaye, 1845

CHTHONIIDAE

Pseudochthonius homodentatus Chamberlin, 1929

Brazil: Amazonas, Municipios Silves & Itacotiara, Mil Madereira Itacotiara Ltda., 3°00'S, 58°40'W, VII/XII-2000, 1 nymph in nest # 1 of a total of 8 examined nests (Torres, 2001).

Tyrannochthonius migrans Mahnert, 1979

Brazil: Amazonas, Municipios Silves & Itacotiara, Mil Madereira Itacotiara Ltda., 3°00'S, 58°40'W, VII/XII-2000, 1 ♀ in nest # 1 of a total of 8 examined nests (Torres, 2001).

IDEORONCIDAE

Xorilbia cf. *gracilis* (Mahnert, 1985) (= *Albiorix* sp. cf. *gracilis*: Torres, 2001).

Brazil: Amazonas: Municipios Silves & Itacotiara, Mil Madereira Itacotiara Ltda., 3°00'S, 58°40'W, VII/XII-2000, 1 nymph in nest # 5 of a total of 8 examined nests (Torres, 2001).

OLPIIDAE

Pachyolpium irmgardae Mahnert, 1979

Brazil: Amazonas, Municipios Silves & Itacotiara, Mil Madereira Itacotiara Ltda., 3°00'S, 58°40'W, VII/XII-2000, 2 nymphs in one nest of a total of 8 examined nests (Torres, 2001).

TURDIDAE

Phoenicurus ochruros gibraltariensis (Gmelin, 1789)

CHEIRIDIIDAE

Cheiridium museorum (Leach, 1817)

Europe: (Roewer, 1937; Beier, 1948).

Phoenicurus ochruros (Gmelin, 1789) (= black redstart: Ranius & Wilander, 2000).

CHEIRIDIIDAE

Cheiridium museorum (Leach, 1817)

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1963, 1983).

CHELIFERIDAE

Chelifer cancroides cancroides (Linnaeus, 1758)

Austria: Lower Austria, Scheibbs Distr. (Ressler & Beier, 1958; Ressler, 1963, 1983).

France: Haute-Savoie, Bossy-sur-Frangy, VIII-1983, leg. J. Steffen, 2♂, det. V. Mahnert.

Switzerland: canton of Vaud, Commugny, 29-IX-1963, leg. J. Steffen, 4♂, 5♀, det. V. Mahnert.

LARCIDAE

Larca lata (Hansen, 1884)

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1963, 1965, 1983).

Phoenicurus phoenicurus (Linnaeus, 1758)

CHEIRIDIIDAE

Cheiridium museorum (Leach, 1817)

Finland: Aland (? Tvärminne or Helsingfors) (Nordberg, 1936).

CHERNETIDAE

Allochernes wideri (C. L. Koch, 1843)

Austria: Lower Austria, Scheibbs Distr. (Ressler & Beier, 1958; Ressler, 1963, 1983).

Dinocheirus panzeri (C. L. Koch, 1837) (= *Dinocheirus panzeri panzeri*: Ressler, 1983; = *Dinocheirus panzeri rufeolus*: Ressler, 1983).

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1963, 1983).

Sialia sp.

CHERNETIDAE

Parachernes squarrosus Hoff, 1949

USA: Illinois, Quincy, in bluebird box (Hoff, 1949).

Turdus merula Linnaeus, 1758

CHTHONIIDAE

Chthonius (Ephippiochthonius) fuscimanus Simon, 1900

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1983).

Chthonius (Chthonius) ischnocheles (Hermann, 1804)

England: Newcastle-upon-Tyne (Jones, 1975).

Tyrannochthonius kermadecensis (Beier, 1976) (= *Paraliochthonius kermadecensis*: Beier, 1976).

New Zealand: Kermadec Is., in deserted nest (Beier, 1976).

CHELIFERIDAE

Chelifer cancroides cancroides (Linnaeus, 1758)

Finland: Åland (? Tvärminne or Helsingfors) (Nordberg, 1936).

Dactylochelifer latreillei latreillei (Leach, 1817)

Slovakia (and/or Austria-Czech Republic): (Christophoryova & Krumpalova, 2010).

CHERNETIDAE

Dinocheirus panzeri (C. L. Koch, 1837) (= *Dinocheirus panzeri rufeolus*: Ressler, 1983).

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1983).

NEOBISIIDAE

Neobisium (Neobisium) sylvaticum (C. L. Koch, 1835)

Austria: Lower Austria, Scheibbs Distr. (Ressler, 1983).

Turdus philomelas Brehm, 1831

CHELIFERIDAE

Dactylochelifer latreillei latreillei (Leach, 1817)

Slovakia (and/or Austria-Czech Republic): (Christophoryova & Krumpalova, 2010).

Turdus pilaris Linnaeus, 1758

CHEIRIDIIDAE

Cheiridium museorum (Leach, 1817)

Finland: Åland (? Tvärminne or Helsingfors) (Nordberg, 1936).

Turdus sp.

CHTHONIIDAE

Chthonius (Ephippiochthonius) tetrachelanus (Preyssler, 1790)

Czech Republic: Prague, Zavadilova ul., nest of *Turdus* sp. (Stahlavsky, 2001).

TYRANNIDAE

Sayornis phoebe (Latham, 1790)

CHELIFERIDAE

Chelifer cancroides cancroides (Linnaeus, 1758)

North America: (Beier, 1948).

TYTONIDAE

Tyto alba (Scopoli, 1769)

CHELIFERIDAE

Chelifer cancroides cancroides (Linnaeus, 1758)

France: Haute-Savoie, Bossy-sur-Frangy, 450m, among pellets, 1983-1984,
leg. J. Steffen, 5♂, 15♀ 1 trito-, 1 deutonymph, det. V. Mahnert.

Switzerland: Genève, Jussy-Monniaz, "Les Gressevaux", among barn owl
pellets, 1976, leg. M. Jaussi, 1♀, det. V. Mahnert.

LARCIDAE

Larca lata (Hansen, 1884)

Netherlands: Gelderland, Vorchten (Heerde), loft of a church, among barn
owl pellets (Tooren, 2001).

UPUPIDAE

Upupa epops Linnaeus, 1758

CHERNETIDAE

Pselaphochernes scorpioides (Hermann, 1804)

Slovakia: (Christophoryova & Krumpalova, 2010).

UNIDENTIFIED FAMILIES: Nests and guano in colonies of unidentified birds

ATEMNIDAE

Diplotennus insularis Chamberlin, 1933

Brazil: St. Paul's Rocks (Arquipélago de São Pedro e São Paulo),
0°55'10"N/29°20'33"W, (Atlantic Ocean), in bird nests and on birds
(Chamberlin, 1933; Beier, 1940, 1948).

Note: Three species of sea birds are breeding on the islets of this archipelago: *Sula
leucogaster* (Pelcaniformes, Sulidae), *Anous stolidus* and *A. minutus*
(Charadriiformes, Laridae) (Edwards, 1979).

CHEIRIDIIDAE

Apocheiridium rossicum Redikorzev, 1935

Russia: Ural Mts, Perm, on unidentified bird (Redikorzev, 1938).

Cheiridium museorum (Leach, 1817)

England: (Kew, 1911, Beier, 1948); Belton, Leicestershire, in old bird's
nest (Robin/house sparrow?) in dry stone wall (Jones, 1975).

Germany: "Ostdeutschland", in birds' nests (Drogla & Lippold, 2004)

Slovakia: (Krumpal & Cyprich, 1988; Christophoryova & Krumpalova,
2010).

CHELIFERIDAE

Chelifer cancroides cancroides (Linnaeus, 1758)

Slovakia: (Krumpal & Cyprich, 1988; Christophoryova & Krumpalova,
2010).

Dactylochelifer latreillei latreillei (Leach, 1817)

Slovakia: (Krumpal & Cyprich, 1988).

Paisochelifer callus (Hoff, 1945)

USA: eastern and central USA, in birds' nests (Muchmore, 1990).

CHERNETIDAE

Allochernes wideri (C. L. Koch, 1843)

Austria: (Beier, 1932; Beier, 1948); Lower Austria, Scheibbs Distr. (Ressel, 1963).

Germany: in birds' nests (Schenkel, 1928); Bayern, Aschaffenburg, "in Nestern von Höhlenbrütern" (Helvesen, 1966); "Ostdeutschland", in birds' nests (Drogla & Lippold, 2004).

Slovakia: (Krumpal & Cyprich, 1988; Christophoryova & Krumpalova, 2010).

Sweden: Östergötland: in 40.9% of hollow oaks with bird nests (Ranius & Wilander, 2000).

Chernes cimicoides (Fabricius, 1793)

Slovakia: (Krumpal & Cyprich, 1988).

Chernes hahnii (L. Koch, 1873)

Slovakia: (Krumpal & Cyprich, 1988; Christophoryova & Krumpalova, 2010).

Chernes vicinus (Beier, 1932) (= *Allochernes vicinus*: Krumpal & Cyprich, 1988).

Slovakia: (Krumpal & Cyprich, 1988).

Chernes sp.

England: frequently in nests, often in very large numbers (Woodroffe, 1953).

Slovakia: (Krumpal & Cyprich, 1988).

Dendrochernes cyrneus (L. Koch, 1878)

Slovakia: (Krumpal & Cyprich, 1988; Christophoryova & Krumpalova, 2010).

Dinocheirus panzeri (C. L. Koch, 1937)

Austria: Lower Austria, Scheibbs Distr. (Ressl, 1963).

Netherlands: Zuid-Holland, Meyendel, uit divers nest-materiaal (Tooren, 2005).

Slovakia: (Krumpal & Cyprich, 1988).

Hesperochernes montanus Chamberlin, 1935

USA: Montana, Girds Creek, Ravalli County, in a bird's nest (Chamberlin, 1935).

Lamprochernes chyzeri (Tömösvary, 1882)

Slovakia: (Krumpal & Cyprich, 1988; Christophoryova & Krumpalova, 2010).

Lamprochernes nodosus (Schränk, 1761)

Slovakia: (Krumpal & Cyprich, 1988; Christophoryova & Krumpalova, 2010).

Neochelanus patagonicus (Tullgren, 1900)

Argentina: Santiago del Estero, Añatuya, in birds' nests, identified by Feio [MNRJ] (Mazza, 1943).

Note: This locality is mentioned in Feio (1945) as "Añatinga", an error repeated by Ceballos & Rosso de Ferradás (2008).

Opsochernes carbophilus Beier, 1966

New Zealand: Occasionally in bird nests (Beier, 1976).

Parachernes cf. *argentinus* Beier, 1967

Argentina: [locality not specified], in birds' nests [not specified] (Turienzo *et al.*, 2008).

Pselaphochernes scorpioides (Hermann, 1804)

Austria: (Beier, 1948).

CHTHONIIDAE

Chthonius (Ephippiochthonius) tetrachelatus (Preyssler, 1790)

Austria: Lower Austria, Scheibbs Distr. (Ressl, 1963).

Slovakia: (Krumpal & Cyprich, 1988).

Chthonius sp.

Slovakia: (Krumpal & Cyprich, 1988).

GARYPIDAE

Garypus titanius Beier, 1961

Ascension Island: Bos'nbird Isle, "im Vogelguano der Nistkolonien" [in birds's guano of the nesting colony], 13 species of sea birds (Beier, 1961).

GEOGARYPIDAE

Geogarypus albus Beier, 1963

Malaysia: Selangor, Rantau Panjang, 5 mi N of Klang, 1960, ♂ holotype, nest # 65, from same locality, 1960, ♀ allotype [BISHOP], nest # 62, 1960, 1 ♀ paratype, nest # 26, 1960, 1 ♂ paratype, nest # 111 (Beier, 1963).

Geogarypus longidigitatus (Rainbow, 1897) (= *Geogarypus elegans audyi* Beier, 1952: Beier 1963).

Malaysia: Selangor, Rantau Panjang, 8 km N of Klang, 1960, 1 deutonymph, 1 tritonymph, nest # 231; 1960, 1 tritonymph, 3 ♂♂, nest # 255; 1960, 1 deutonymph, nest # 257; 1960, 1 deutonymph, nest # 256; 1960, 1 ♀ (gravid), nest # 270; 1960, 1 tritonymph, nest # 274; 13-VII-1960, 1 ♀, nest # 282; 1960, 1 tritonymph, nest # 290; 5-X-1960, 1 protonymph, nest # 317 (Beier, 1963).

LARCIDAE

Larca lata (Hansen, 1884)

Slovakia (and/or Austria-Czech Republic): (Christophoryova & Krumpalova, 2010).

Sweden: province of Östergötland, in hollow oaks with bird nests (Ranius & Wilander, 2000).

NEOBISIIDAE

Neobisium (Neobisium) carcinoides (Hermann, 1804) (= *Neobisium muscorum*: Chater, 1989; Krumpal & Cyprich, 1988).

Slovakia: (Krumpal & Cyprich, 1988; Fenda *et al.*, 1998: nest type *Motacilla*; Christophoryova & Krumpalova, 2010).

United Kingdom: Wales, Ceredigion, found in birds' nests on the ground (Chater, 1989).

Neobisium (Neobisium) crassifemoratum Beier, 1928

Slovakia: (Krumpal & Cyprich, 1988).

Neobisium (Neobisium) inaequale Chamberlin, 1930

Slovakia: (Krumpal & Cyprich, 1988; Fenda *et al.*, 1998: nest type *Motacilla*).

Neobisium (Neobisium) sylvaticum (C. L. Koch, 1843)

Austria: Lower Austria, Scheibbs Distr. (Ressl, 1963).

OLPIIDAE

Xenolpium pacificum pacificum (With, 1907)

New Zealand: (Beier, 1976).

PSEUDOGARYPINIDAE

Pseudogarypinus frontalis (Banks, 1909)

USA: western United States, in birds' nests (Muchmore, 1990).

WITHIIDAE

Dolichowithius argentinus Beier, 1959

Argentina: [province, locality not specified] in birds' nests [not specified] (Turienzo *et al.*, 2008).

Dolichowithius cf. *argentinus* Beier, 1959

Argentina: [province, locality not specified] in birds' nests [not specified] (Turienzo *et al.*, 2008).

Stenowithius duffeyi Beier, 1961

Ascension Island: Bos'nbird Isle, "auf dem Vogelguano der Nistkolonien" [on the birds' guano in the nesting colony"] (13 species of sea birds) (Beier, 1961).

PSEUDOSCORPIONES, undetermined species

Argentina: Salta, Dto Santa Bárbara, in the proximities of the river Lavayen, together with *Psammolestes coreodes* (Bergroth, 1911) [Hemiptera: Reduviidae: Triatominae] (Mazza, 1943).

India: West Bengal, 788 adult pseudoscorpions in 1536 nests of 8 species of birds [*Streptopelia chinensis* (Scopoli); *Acridotheres tristis* (Linnaeus); *Sturnus contra* Linnaeus; *Corvus splendens* Vieillot; *Prinia socialis* Sykes; *Ploceus philippinus* (Linnaeus); *Passer domesticus* (Linnaeus)] (Bhattacharyya, 1990).

USA: Florida, in poultry manure (Propp & Morgan, 1985).

DISCUSSION

14 families of pseudoscorpions with 63 genera and 85 species are recorded from birds' nests. Chernetidae are dominant with 22 genera and 35 species, these numbers represent about 19% of the described genera and 5% of the described species in this family (Harvey, 2009). It is followed by Chthoniidae (5 genera/subgenera and 9 species) (= about 1.3% of the described species), Cheliferidae (5 genera and 6 species/subspecies) (=about 8% of the described genera and about 2% of the described species!), Olpiidae (4 genera and 4 species), Withiidae (4 genera and 7 species) (= about 11% of the described genera and 4.5% of the described species!), Atemnidae (4 genera and 5 species/subspecies), Cheiridiidae (2 genera and 5 species), Neobisiidae and Geogarypidae (1 genus and 4 species each), Larcidae (1 genus and 2 species), Garypidae, Ideoroncidae, Pseudogarypinidae (1 species each), Syarinidae (1 species). The predominance of Chernetidae might be explained partly by the corticolous biology of many of its species.

45 families of birds have been recorded, represented by a total of 98 identified species and a certain number of unidentified taxa, a very small part compared to the number of species and families recognized world-wide (about 142 families and 9700 species). The ranking is headed by Procellariidae, Turdidae (7 spp.) each, Furnariidae (6 or 5 spp.), Hirundinidae (5 spp.), Picidae, Sylviidae (4 spp. each), Strigidae (4 spp.), Anatidae, Cakatuidae, Corvidae, Estrildidae, Laniidae, Paridae, Psittacidae, Troglodytidae (3 spp. each), Anatidae, Passeridae (3 spp. each), Apodidae, Ardeidae, Cisticolidae, Columbidae, Laridae, Motacillidae, Muscicapidae, Phasianidae, Pycnonotidae (2 spp. each), Accipitridae, Cinclidae, Climacteridae, Coraciidae, Emberizidae, Formicariidae, Fringillidae, Halcyonidae, Icteridae, Meropidae, Nectariidae, Panuridae, Phalacrocoracidae, Remizidae, Sittidae, Sturniidae, Tetraronidae, Tyrannidae, Tytonidae, and Upupidae (1 sp. each). Easy accessibility of nests for human observers explains probably the predominance of certain families.

Little information can be gathered from listing pseudoscorpions and birds' nests per country. That reflects only the interest of collectors in the mentioned countries, or particular interest in other arthropod groups present in birds' nests. This fact is emphasized by the leading position of Austria (17 bird species studied, but compare this to the over 200 bird species breeding in Austria!) which is almost exclusively due to the activity of one single person, Franz Ressler from the Scheibbs District, Lower Austria. The prominence of Slovakia is due to a research program initiated mainly by J. Kristofik, and the many data from Malaysia are the results of the collecting by H. E. McClure and Lim Boo-Liat (Beier, 1963, 1964). From some European countries we do not have any record (e.g. Spain, Belgium, Greece, etc.). Several countries in tropical areas (i.e. Brazil, Venezuela, India, Uganda) have very few records of pseudoscorpions from birds' nests. A similar situation was presented for the insect fauna in birds' nests from the Neotropical Region (Di Iorio & Turienzo, 2009). Furthermore, it can be pointed out that indications of origin in older collections were sometimes incomplete, without any information on habitats (see *Parazaona bucheri* and *Parachernes argentinus* under *Phacellodomus* sp.).

The presence of pseudoscorpions in birds' nests is certainly favoured by good or optimal living conditions offered by this particular niche: abundance of potential

prey (mites, larvae of various insects, e.g. fleas and dipteras, in the nests, biting lice (Mallophaga) directly on the birds), and also microclimatic conditions without large variation in humidity, temperature and light (nests in hollow trees) (see Krumpal & Cyprich, 1988 and Christophoryova & Krumpalova, 2010).

It is evident that the building site of nests highly influences the presence of one or another pseudoscorpion family. Nests built on the ground will be visited mainly by soil-dwelling genera and species, e.g. Chthoniidae (genera *Chthonius*, *Tyrannochthonius*), Neobisiidae (*Neobisium*), Olpiidae, Geogarypidae and, to a lesser extent, Garypidae and Syarinidae or even Withiidae (animals of this family are found in litter or under stones, but also under the bark of living or fallen trees). *Mundochthonius styriacus* (Chthoniidae) and *Anthrenochernes stellae* (Chernetidae) seem to prefer the constant conditions of hollow trees and are therefore frequently found in birds' nests constructed in this habitat. On the other hand, many species of usually bark-inhabiting families (Cheiridiidae, Chernetidae, Cheliferidae) are regularly colonizing nests in trees, but the presence of several genera, e.g. *Dactylochelifer* (Cheliferidae), *Apatochernes*, *Chelanops*, *Chernes* or *Sundochernes* (Chernetidae) is common, though probably not very frequent. Biology is explaining the sporadic presence of the tritonymph of *Neobisium sylvaticum* in nests in trees: this stage frequently climbs on shrubs and trees (Beier, 1963b) and arrives accidentally in nests. Some species of Cheiridiidae (*Apocheiridium* spp., *Cheiridium museorum*), Cheliferidae (*Chelifer cancroides*) and Chernetidae (*Dinocheirus panzeri*) are regularly colonizing nests of synanthropic birds (e.g. *Columba livia*, *Passer domesticus*, *Gallus gallus*) or may be passively dispersed by other birds (e.g. *Larca lata* by *Phoenicurus ochrurus*: Ressler, 1963b, 1965).

The abundance of pseudoscorpions is usually low (particularly in most ground nests), but may be very high in old nests in the nature, and even more so in nests of synanthropic bird species.

Only a few species can be considered as (more or less) exclusive colonizers of tree nests of birds, as far as we can judge from the scarce surveys and collecting data. These are *Diplothemnus insularis* Chamberlin (St Paul's Islands), *Hesperochernes montanus* (USA) (Beier, 1948), *Troglochernes dewae* (Australia) (Harvey & Volschenk, 2007), *Parazaona bucheri*, *Parazaona morenensis* (Turienzo, Di Iorio & Mahnert, unpublished data) and *Calidiochernes musculi* (South America) (Beier, 1957). On the other hand, some common bark-inhabiting species of the genera *Victorwithius* and *Dolichowithius* (Withiidae from South America) have never or very rarely been found in birds' nests. Even more surprising is the quasi total absence in nests of some Atemnidae, e.g. *Paratemnoides nidificator* (Balzan), *P. pallidus* (Balzan), and *P. elongatus* (Banks). These species show evidence of social behaviour and can be found in huge numbers under the bark of standing or fallen trees.

ACKNOWLEDGEMENTS

The authors express their deep thanks to Dr Mark S. Harvey (Western Australian Museum, Perth) and to a second, anonymous, reviewer for their linguistic ameliorations, comments and bibliographic help, they improved considerably the first version of this list. Sincere thanks are also due to Dr Peter Schwendinger (Muséum

d'histoire naturelle, Genève) for his intensive help during the revisional process of this paper. We are also thankful to Mrs Christelle Mougín (Library, Muséum d'Histoire naturelle, Geneva) for her efficient help in bibliographic research.

REFERENCES

NOTE: The authors (V. M. in particular) would appreciate to receive complementary information and/or missed references dealing with the presence of pseudoscorpions in birds' nests. Two references apparently citing pseudoscorpions in association with birds should be omitted from such a bibliographic list: George (1989) (p. 337: "Contrary to my usual experience I saw no...pseudoscorpions"), and Barreto & Carvalho (1967) (p. 18: "...artropodos predadores, como...escorpiónidas...").

- ADIS, J. 1979. Vergleichende ökologische Studien an der terrestrischen Arthropodenfauna zentralamazonischer Überschwemmungswälder. *Dissertation Ph.D., Universität Ulm*, 99 pp.
- ADIS, J. 1992. Überlebenstrategien terrestrischer Invertebraten in Überschwemmungswäldern Zentralamazoniens. *Verhandlungen des Naturwissenschaftlichen Vereins in Hamburg (NF)* 33: 21-114.
- ADIS, J. & MAHNERT, V. 1985. On the natural history and ecology of Pseudoscorpiones (Arachnida) from an Amazonian blackwater inundation forest. *Amazoniana* 9(3): 297-314.
- ADIS, J. & MAHNERT, V. 1990. On the species composition of Pseudoscorpiones from Amazonian dryland and inundation forests in Brazil. *Revue suisse de Zoologie* 97: 49-53.
- AMERICAN ORNITHOLOGISTS' UNION 1998. Check-list of North American Birds. 7th Edition. *American Ornithologists' Union, Washington DC*, 829 p.
- ARAMBURU, R., CALVO, S., CARPINTERO, D. L. & CICCHINO, A. C. 2009. Artrópodos presentes en nidos de cotorra *Myiopsitta monachus monachus* (Aves: Psittacidae). *Revista del Museo Argentino de Ciencias Naturales (nueva serie)* 11(1): 1-5.
- BARRETO, M., BARRETO, P. & D'ALESSANDRO, A. 1984. *Psammolestes arthuri* (Hemiptera: Reduviidae) and its parasite *Telenomus capito* (Hymenoptera: Scelionidae) in Colombia. *Journal of Medical Entomology* 21(6): 703-705.
- BARRETO, M. P. & CARVALHEIRO, J. 1967. Estudos sobre reservatórios silvestres do *Trypanosoma cruzi*. XVIII. Observações sobre a ecologia do *Psammolestes tertius*, Lent & Jurbert, 1965 (Hemiptera-Reduviidae). *Revista brasileira de Biologia* 27: 13-25.
- BEIER, M. 1929a. Die Pseudoscorpione des Wiener Naturhistorischen Museums. II. Panctenodactyli. *Annalen des Naturhistorischen Museums in Wien* 42: 341-367.
- BEIER, M. 1929b. Alcuni Pseudoscorpioni raccolti da C. Menozzi. *Bollettino della Società entomologica italiana* 61: 154-156.
- BEIER, M. 1932. Pseudoscorpionidea II. Subord. C. Cheliferinea. *Das Tierreich* 58: I-XXI, 1-294.
- BEIER, M. 1940. Die Pseudoscorpionidenfauna der landfernen Inseln. *Zoologische Jahrbücher, Systematik (Ökologie), Geographie und Biologie* 74: 161-192.
- BEIER, M. 1948. Phoresie and Phagophilie bei Pseudoscorpionen. *Österreichische zoologische Zeitschrift* 1(5): 441-497.
- BEIER, M. 1957a. Eine Pseudoscorpioniden-Ausbeute aus Venezuela. *Memorie del Museo Civico di Storia Naturale di Verona* 4: 131-142.
- BEIER, M. 1957b. Los insectos de las Islas Juan Fernandez 37. Die Pseudoscorpioniden-Fauna der Juan-Fernandez-Inseln (Arachnida Pseudoscorpionida). *Revista Chilena de Entomología* 5: 451-464.
- BEIER, M. 1961. Pseudoscorpione von der Insel Ascension. *Annals and Magazine of Natural History* (13)3: 593-598.

- BEIER, M. 1963a. Pseudoscorpione aus Vogelnestern von Malaya. *Pacific Insects* 5(3): 507-511.
- BEIER, M. 1963b. Ordnung Pseudoscorpionidea (Afterskorpione). *Bestimmungsbücher der Bodenfauna Europas* 1: I-VII, 1-313.
- BEIER, M. 1964. Some further nidicolous Chelonethi (Pseudoscorpionidea) from Malaya. *Pacific Insects* 6(2): 312-313.
- BEIER, M. 1967. Zwei neue Chernetiden (Pseudoscorp.) von Argentinien. *Annalen des Naturhistorischen Museums in Wien* 70: 95-98.
- BEIER, M. 1971. Ein neuer *Mundochthonius* (Arachnida, Pseudoscorpionidea) aus der Steiermark. *Mitteilungen des Naturwissenschaftlichen Vereins für Steiermark* 100: 383-387.
- BEIER, M. 1976. The pseudoscorpions of New Zealand, Norfolk, and Lord Howe. *New Zealand Journal of Zoology* 3: 199-246.
- BENEDICT, E. M. & MALCOLM, D. R. 1979. Pseudoscorpions of the family Cheliferidae from Oregon (Pseudoscorpionida, Cheliferoidea). *Journal of Arachnology* 7: 187-198.
- BENEDICT, E. M. & MALCOLM, D. R. 1982. Pseudoscorpions of the family Chernetidae newly identified from Oregon (Pseudoscorpionida, Cheliferoidea). *Journal of Arachnology* 10: 97-109.
- BHATTACHARYYA, S. 1990a. A survey of pseudoscorpions in the nests of *Passer domesticus* (Linnaeus) in West Bengal. *Environmental Ecology* (Kalyan) 8(1B): 245-247.
- BHATTACHARYYA, S. 1990b. Factors controlling growth of arthropod fauna in the nests of birds. *Environment & Ecology* (Kalyan) 8(2): 626-629.
- BHATTACHARYYA, S. 1999. New records of arthropods associated with the birds' nests in India. *Environment & Ecology* (Kalyan) 17(3): 685-692.
- BUCHER, E. H. 1974. Observaciones ecológicas sobre los artrópodos del bosque chequeño de Tucumán. *Revista de la Facultad de Ciencias Exactas, Físicas y Naturales de Córdoba* (nueva serie), Biología 1: 35-122.
- CARCAVALLO, R., OTERO, M. A., TONN, R. I. & ORTEGA, R. 1975. Notas sobre la biología, ecología y distribución geográfica de *Psammolestes arthuri* (Pinto) 1926 (Hemiptera, Reduviidae). Descripción de los estadios imaginales. *Boletín Informativo de la Dirección de Malariaología y Saneamiento Ambiental* 15(5): 231-239.
- CEBALLOS, A. & ROSSO DE FERRADAS, B. 2008. Pseudoscorpiones. In: CLIPS, L. E., DEBANDI, G. & ROIG-JUNENT, S. (eds): *Biodiversidad de Artrópodos Argentinos* 2: 105-116.
- CHAMBERLIN, J. C. 1933. Scorpions of the atemnid subfamily Miratemninae. *Annals of the entomological Society of America* 26: 262-268.
- CHAMBERLIN, J. C. 1935. A new species of false scorpion (*Hesperochernes*) from a bird's nest in Montana. *Pan-Pacific Entomology* 11: 37-39.
- CHATER, A. O. 1989. Pseudoscorpiones. False-scorpions in Ceredigion, vc 46. *Dyfed Invertebrate Group, Newsletter* (14): 5-10.
- CHRISTOPHORYOVA, J. & KRUMPALOVA, Z. 2010. Pseudoscorpions in the nests of birds (p. 108-109), and poster. In: ZABKA, M. (ed.). Book of Abstracts, 18th International Congress of Arachnology, 11-17 July 2010. *Siedlce, Poland*, 1-506.
- COMITÉ BRASILEIRO DE REGISTROS ORNITOLÓGICOS 2007. Lista das aves do Brasil. 6^a edição (16 de agosto de 2007). *Sociedade Brasileira de Ornitologia*. Available from <http://www.cbro.org.br> (accessed IV. 2010).
- DI IORIO, O. & TURIENZO, P. 2009. Insects found in birds' nests from the Neotropical Region (except Argentina) and immigrant species of Neotropical origin in the Nearctic Region. *Zootaxa* 2187: 1-144.
- DI IORIO, O., TURIENZO, P., NAVA, S., MASTROPAOLO, M., MANGOLD, A.J., GONZÁLEZ ACUÑA, D. & GUGLIELMONE, A. A. 2010. *Asthenes dorbignyi* (Reichenbach) (Passeriformes: Furnariidae) host of *Argas neghmei* Kohls & Hoogstraal, 1961 (Acari: Argasidae). *Experimental and Applied Acarology* doi: 10.1007/s10493-009-9333-4.
- DROGLA, R. & LIPPOLD, K. 2004. Zur Kenntnis der Pseudoskorpion-Fauna Ostdeutschlands (Arachnida, Pseudoscorpiones). *Arachnologische Mitteilungen* 27/28: 1-54.

- DUTRA DE CARVALHO, T., GUEDES, N. M. R. & FAVERO, S. 2005. Artropodofauna associada a ninhos de Arara Azul no Pantanal de Miranda, Mato Grosso do Sul, Brasil. *Bio(in)formação, Monografias Ciências Biológicas* 2005: 100-112.
- EDWARDS, A. 1979. General report of the Cambridge Expedition to Saint Paul's Rocks. *Cambridge Expedition to Saint Paul's Rocks* (Cambridge): 1-32.
- ELLINGSEN, E. 1911. Pseudoscorpionina. In: LE ROI, O. (ed.). Zur Fauna des Vereinsgebietes. *Sitzungsberichte herausgegeben vom Naturhistorischen Verein der Preussischen Rheinländer und Westfalens* 1911: 173-174.
- ELLINGSEN, E. 1912. The pseudoscorpions of South Africa based on the collections of the South African Museum, Cape Town. *Annales of the South African Museum* 10: 75-128.
- ELLINGSEN, E. 1913. Note on some pseudoscorpions in the British Museum. *Annals and Magazine of Natural History* (8) 11: 451-455.
- ELLINGSEN, E. 1914. On the pseudoscorpions of the Indian Museum. *Records of the Indian Museum* 10(1): 1-14.
- FEIO DE ARAUJO, J. L. 1945. Novos pseudoscorpíões de região Neotropical (com a descrição de uma subfamília, dois generos e sete especies). *Boletim do Museu Nacional Rio de Janeiro, Zoologia*, 44: 1-47.
- FENDA, P., KRUMPAL, M. & CYPRICH, D. 1998. The soil fauna in the birds' nests in Slovakia (p. 23-30). In: PIZL, V. & TAJOVSKY, K. (eds). Soil zoological problems in central Europe. Proceedings of the 4th Central European Workshop on Soil Zoology held in Ceske Budejovice, Czech Republic, April 23-24, 1997. *Institute of Soil Biology, Academy of Sciences of the Czech Republic*.
- GÄRDENFORS, U. & WILANDER, P. 1995. Ecology and phoretic habits of *Anthrenochernes stellae* (Pseudoscorpionida, Chernetidae). *Bulletin of the British arachnological Society* 10(1): 28-30.
- GEORGE, R. S. 1961. More records of Gloucestershire false-scorpions. *Report of the North Gloucestershire Naturalists' Society* 1959-60: 38.
- GEORGE, R. S. 1989. Large populations of fleas (Siphonaptera) in birds' nests and a species new to England. *Entomologist's Gazette* 40: 337-343.
- GRIMALDI, P., STORACCIO, S. C. & CEBALLOS, A. 2006. Datos preliminares del comportamiento de apareamiento, morfología genital y dimorfismo sexual de *Parachernes* (*Parachernes*) cf. *pulcher* Mahnert, 1979 (Pseudoscorpiones, Chernetidae) (p. 40). *Primeras Jornadas de Comportamiento Animal. Montevideo, Uruguay, 30 de Noviembre y 1 de Diciembre de 2006*.
- HARVEY, M. S. 2009. Pseudoscorpions of the world. Version 1.2. *Western Australian Museum Perth*. Available from <http://www.museum.wa.gov.au/arachnids/pseudoscorpions> (accessed VI. 2010).
- HARVEY, M. S. & VOLSCHENK, E. S. 2007. A review of some Australasian Chernetidae: *Sundochernes*, *Troglochernes* and a new genus (Pseudoscorpiones). *Journal of Arachnology* 35: 238-277.
- HELVERSEN, O. VON 1966. Pseudoskorpione aus dem Rhein-Main-Gebiet. *Senckenbergiana biologica* 47(2): 131-150.
- HOFF, C. C. 1944. Notes on three pseudoscorpions from Illinois. *Illinois Academy of Science Transactions* 37: 123-128.
- HOFF, C. C. 1949. The pseudoscorpions of Illinois. *Bulletin of the Illinois Natural History Survey* 24(4): 411-498.
- HOFF, C. C. 1957. *Tejachernes* (Arachnida-Chelonethida, Chernetidae-Chernetinae), a new genus of pseudoscorpion based on *Dinocheirus stercoreus*. *The Southwestern Naturalist* 2(2-3): 83-88.
- HOFF, C. C. 1961. Pseudoscorpions from Colorado. *Bulletin of the American Museum of Natural History* 122 (5): 409-464.
- HULLEY, P. E. 1983. A survey of the flies breeding in poultry manure, and their potential natural enemies. *Journal of the Entomological Society of Southern Africa* 46: 37-47.

- JELLISON, W. M. I. & PHILIP, C. P. 1933. Fauna of nests of the magpie and crow in western Montana. *The Canadian Entomologist* 65: 26-31.
- JONES, P. E. 1975. The occurrence of pseudoscorpions in the nests of British birds. *Proceedings of the British entomological and Natural History Society* 1975: 87-89.
- JONES, P. E. 1978. Phoresy and commensalism in British pseudoscorpions. *Proceedings of the British entomological and Natural History Society* 1978: 90-96.
- JOST, G. 1982. Zur Vorkommen und zur Verbreitung von Pseudoscorpionen (Arachnida, Pseudoscorpionidea) im Naturpark Hoher Vogelsberg. *Hessische faunistische Briefe* (Darmstadt) 2: 2-12.
- KAISILA, J. 1949. A revision of the pseudoscorpion fauna of eastern Fennoscandia. *Suomen Hyönteistieteellinen Aikakauskirja* 15(2): 72-92.
- KEW, H. W. 1911. A synopsis of the false-scorpions of Britain and Ireland. *Proceedings of the Royal Irish Academy* (B)29: 38-64.
- KRISTOFIK, J., MASAN, P. & ŠUSTEK, Z. 1996. Ectoparasites of bee-eater (*Merops apiaster*) and arthropods in its nests. *Biologia* (Bratislava) 51(5): 557-570.
- KRISTOFIK, J., MASAN, P. & ŠUSTEK, Z. 2005. Arthropods in the nests of marsh warblers (*Acrocephalus palustris*). *Biologia* (Bratislava) 60(2): 171-177.
- KRISTOFIK, J., MASAN, P. & ŠUSTEK, Z. 2007. Arthropods (Pseudoscorpionidea, Acarina, Coleoptera, Siphonaptera) in nests of the bearded tit (*Panurus biarmicus*). *Biologia* (Bratislava), 62(6): 749-755.
- KRISTOFIK, J., MASAN, P., ŠUSTEK, Z. & GAJDOS, G. 1993. Arthropods in the nests of penduline tit (*Remiz pendulinus*). *Biologia* (Bratislava) 48(5): 493-505.
- KRISTOFIK, J., MASAN, P., ŠUSTEK, Z. & KLOUBEC, B. 2003. Arthropods (Pseudoscorpionida, Acari, Coleoptera, Siphonaptera) in nests of the tengmalm's owl, *Aegolius funereus*. *Biologia* (Bratislava) 58(2): 231-240.
- KRISTOFIK, J., ŠUSTEK, Z. & GAJDOS, G. 1994. Arthropods in nests of the Sand Martin (*Riparia riparia* Linnaeus, 1758) in South Slovakia. *Biologia* (Bratislava) 49(5): 683-690.
- KRISTOFIK, J., ŠUSTEK, Z. & GAJDOS, G. 1995. Arthropods in the penduline tit (*Remiz pendulinus*) nests: occurrence and abundance in different breeding phases. *Biologia* (Bratislava) 50: 487-493.
- KRISTOFIK, J., ŠUSTEK, Z. & MASAN, P. 2002. Arthropods (Pseudoscorpionida, Acari, Coleoptera, Siphonaptera) in the nests of red-backed shrike (*Lanius collurio*) and lesser grey shrike (*Lanius minor*). *Biologia* (Bratislava) 57(5): 603-613.
- KRUMPAL, M. & CYPRIK, D. 1988. O výskyte štúrikov (Pseudoscorpiones) v hniezdach vtákov (Aves) v podmienkach Slovenska. *Zborník Slovenského národného Muzea, Prorodná vedy* 34: 41-48.
- LEGG, G. & O'CONNOR, J. P. 1997. A review of the Irish pseudoscorpions (Arachnida: Pseudoscorpiones). *Irish Biogeographical Society Bulletin* 20: 105-126.
- LENT, H. 1939. Relatório da excursão científica do Instituto Oswaldo Cruz realizado na zona da Estrada de Ferro Noroeste do Brasil. IV. Observações sobre a fauna de alguns ninhos de aves. *Boletim Biológico de la Facultad de Medicina do São Paulo* (nova série) 4(2): 258-260.
- LESSERT, R. DE 1911. Pseudoscorpions. *Catalogue des Invertébrés de la Suisse* 5: 1-50.
- LINS DUARTE, P. F. 1978. Aranhas encontradas em ninhos de *Phacellodomus rufifrons specularis* (Hellmayr, 1925) (Aves, Passeriformes, Furnariidae) – I. *Revista Nordestina de Biología* (Universidade Federal da Paraíba, Departamento de Biología) 1(1): 55-61.
- LOHMÄNDER, H. 1939. Zur Kenntnis der Pseudoscorpionidenfauna Schwedens. *Entomologisk Tidskrift* 60: 279-323.
- MAZZA, S. 1943. Comprobaciones de *Triatoma platensis*, *Eutriatoma oswaldoi*, *Pastrongylus seai* y *Psammolestes coreodes* en la provincia de Santiago del Estero, todas ellas sin infestación, y de *Eutriatoma sordida* con infestación por *S. cruzi*. Otros datos sobre infestación esquizotripanósica natural silvestre de *Triatoma infestans*. *La Prensa Médica Argentina* (Buenos Aires) 30(34): 15-83.

- MUCHMORE, W. B. 1981. Cavernicolous species of *Larca*, *Archeolarca* and *Pseudogarypus* with notes on the genera (Pseudoscorpionida, Garypidae and Pseudogarypidae). *Journal of Arachnology* 9: 47-60.
- MUCHMORE, W. B. 1990. Pseudoscorpionida (pp.502-527). In: DINDAL, D. L. (ed.). Soil Biology Guide. *John Wiley & Sons, Inc.*
- MURTHY, V. A. & ANANTHAKRISHNAN, T. N. 1977. Indian Chelonethi. *Oriental Insects Monographs* 4: 1-210.
- NELSON JR., S. O. 1971. Phoresy by pseudoscorpions. *Michigan Entomologist* 4: 95-96.
- NORDBERG, S. 1936. Biologisch-ökologische Untersuchungen über die Vogelnidicolen. *Acta zoologica fennica* 21: 1-268.
- OGAWA, G. M. 2008. Artrópodes em ninhos de *Columba livia* Gmelin, 1789 (Aves, Columbidae) em área urbana de Manaus, Amazonas, Brasil. *Entomologia Brasiliensis* 1(3): 69-72.
- PECK, J. H. & ANDERSON, J. R. 1969. Arthropod predators of immature Diptera developing in poultry droppings in northern California Part I. Determination, seasonal abundance and natural cohabitation with prey. *Journal of Medical Entomology* 6: 163-167.
- PETERSON, A. P. 2002. Zoonomen Nomenclatural data. Available from <http://www.zoonomen.net/avtax/frame.html> (accessed: June 2010)
- PHILIPS, J. R. & DINDAL, D. L. 1990. Invertebrate populations in the nests of a screech owl (*Otus asio*) and an American kestrel (*Falco sparverius*) in central New York. *Entomological News* 101: 170-192.
- PICKARD-CAMBRIDGE, O. 1892. Monograph on the British species of Chernetidea or false scorpions. *Proceedings of the Dorset Natural History and Antiquarian Field Club* 13: 195-231, plates A-C.
- PIFANO, F. 1938. Anotaciones acerca del *Psammolestes arthuri* (Pinto, 1926) (Hemiptera, Heteroptera, Triatomidae), reduvideo hematófago encontrado en nidos de "cucarachero de monte" (probablemente Dendrocolaptidae) en un sector de los valles de Yaracuy. – Su importancia como posible vector en la naturaleza del *Schizotripanum cruzi*, Chagas 1909. *Gaceta Médica de Caracas* 45(16): 241-245.
- PINTO, D. M., RIBEIRO, P. B., SILVEIRA JR., P. & BERNARDI, E. 2005. Flutuação populacional de *Whitius piger* (Pseudoscorpionida) em granja avícola em Pelotas, RS, Brasil. *Archives of Veterinary Science* 10(2): 115-118.
- PROPP, G. D. & MORGAN, P. B. 1985. Mortality of eggs and first-stage larvae of the house fly, *Musca domestica* L. (Diptera: Muscidae), in poultry manure. *Journal of the Kansas Entomological Society* 58: 442-447.
- PUNG, O. J., CARLILE, L. D., WHITLOCK, J., VIVES, S. P., DURDEN, L. A. & SPADGENSKE, E. 2000. Survey and host fitness effects of red-cockaded woodpecker blood parasites and nest cavity arthropods. *Journal of Parasitology* 86(3): 506-510.
- RANIUS, T. & WILANDER, P. 2000. Occurrence of *Larca lata* H. J. Hansen (Pseudoscorpionida: Garypidae) and *Allochernes wideri* C. L. Koch (Pseudoscorpionida: Chernetidae) in tree hollows in relation to habitat quality and density. *Journal of Insect Conservation* 4: 23-31.
- REDIKORZEV, V. 1938. Les Pseudoscorpions de l'Indochine française recueillis par M. C. Dawidoff. *Mémoires du Muséum National d'Histoire Naturelle Paris* (N.S.) 10: 69-116.
- REMSEN JR., J. V., CADENA, C. D., JARAMILLO, A., NORES, M., PACHECO, J. F., ROBBINS, M. B., SCHUKLENBERG, T. S., STILES, F. G., STOTZ, D. F. & ZIMMER, K. J. 2008. A classification of the bird species of South America. Version 11, January 2008. *American Ornithologists' Union, South American Classification Committee*. Available at <http://www.museum.lsu.edu/Remsen/SACCBaseline.html> (accessed June 2010).
- RESSL, F. 1963. Können Vögel als passive Verbreiter von Pseudoscorpioniden betrachtet werden? *Die Vogelwelt* 84(4): 114-119.
- RESSL, F. 1965. Über Verbreitung, Variabilität und Lebensweise einiger österreichischer After-scorpione. *Deutsche entomologische Zeitung* 12: 289-295.
- RESSL, F. 1983. Die Pseudoscorpione Niederösterreichs mit besonderer Berücksichtigung des Bezirkes Scheibbs (pp. 174-202). In: RESSL, F. (ed.). *Naturkunde des Bezirkes Scheibbs. Die Tierwelt des Bezirkes Scheibbs, Band 2, Scheibbs. Verlag R. u. F. Radinger*, 1-584.

- RESSL, F. & BEIER, M. 1958. Zur Ökologie, Biologie und Phänologie der heimischen Pseudoskorpione. *Zoologische Jahrbücher, Systematik (Ökologie), Geographie und Biologie* 86: 1-26.
- ROEWER, C. FR. 1937. Chelonethi oder Pseudoskorpione. In: BRONNS, H. G. (ed.): *Klassen und Ordnungen des Tierreichs, 5: Arthropoda. IV: Arachnoidea*, vol. 6(1-2): 1-320. Leipzig, Akademische Verlagsgesellschaft.
- RYDER, J. P. & FREITAG, R. 1974. Densities of arthropod populations in nests of ring-billed gulls. *Canadian Entomologist* 106: 913-916.
- SCHENKEL, E. 1928. Pseudoscorpionida (Afterskorpione). In: DAHL, F. (ed.). *Die Tierwelt Deutschlands 8. Teil. Spinnentiere oder Arachnoidea III* (pp. 52-72). Jena, Verlag Gustav Fischer.
- SILVA, I. G. & LUSTOSA, E. S. 1993. Biologia de *Psammostestes tertius* Lent & Jurberg, 1965 (Hemiptera, Reduviidae). *Revista de Patologia Tropical* 22: 29-42.
- SIMON, H. R. 1966. Wie gelangen Pseudoskorpione in Vogelnester? *Die Vogelwelt* 87(3): 80-83.
- STAHLAVSKY, F. 2001. Stirci (Arachnida: Pseudoscorpiones) Prahy-Pseudoscorpions (Arachnida: Pseudoscorpiones) of Prague. *Klapalekiana* 37: 73-121.
- THALER, K. 1979. Fragmenta Faunistica Tirolensia, IV (Arachnida: Acari: Caeculiidae; Pseudoscorpiones; Scorpiones; Opiliones; Aranei. Insecta: Dermaptera; Thysanoptera; Diptera Nematocera: Mycetophilidae, Psychodidae, Limoniidae und Tipulidae). *Veröffentlichungen des Museum Ferdinandeum* (Innsbruck) 59: 49-83.
- THOMPSON, P. H. 1966. Arthropods from nests of the house sparrow. *Proceedings of the Entomological Society of Washington* 68(1): 44-48.
- TOOREN, D. VAN DEN 2001. First record of the pseudoscorpion *Larca lata* in the Netherlands (Pseudoscorpiones: Garypoidea: Larcidae). *Nederlandse faunistische Mededelingen* 15: 33-39.
- TOOREN, D. VAN DEN 2005. Naamlijst en determinatiesleutel tot de Pseudoschorpioenen van Nederland (Arachnida: Pseudoscorpiones). *Nederlandse faunistische Mededelingen* 23: 91-124.
- TORRES, W. M. P. 2001. Fauna de artrópodes associada a ninhos de aves e mamíferos em uma floresta de terra firme na Amazônia Central, Brasil. *Dissertação de Mestrado em Ciências Biológicas (Entomologia), Universidade do Amazonas, Instituto Nacional de Pesquisas da Amazônia, Manaus, Brazil*, 126 pp.
- TURIENZO, P. & DI IORIO, O. R. 2008. Insects found in birds's nests from Argentina: *Anumbius annumbi* (Vieillot, 1817) (Aves: Furnariidae). *Zootaxa* 1871: 1-55.
- TURIENZO, P., DI IORIO, O. R. & MAHNERT, V. 2008. Resultados preliminares de pseudoescorpiones encontrados en nidos de aves de la Argentina (p. 129). In: II Congreso Latinoamericano de Aracnología & VI Encuentro de Aracnólogos del Cono Sur. Argentina, Salta, 30 de Noviembre – 4 de Diciembre. *Universidad de Salta*, 285 pp.
- UCHIKAWA, K. 1970. Notes on the arthropod fauna of *Delichon urbica* nests in Nagano Prefecture. *Medical Entomology and Zoology* 21(1): 73-77.
- WEYGOLDT, P. 1969. The biology of pseudoscorpions. *Harvard Books in Biology*, I-XIV+1-145.
- WILLS, L. E., MULLENS, B. A. & MANDEVILLE, J. D. 1990. Effects of pesticides on filth fly predators (Coleoptera: Histeridae, Staphylinidae; Acarina: Macrochelidae, Uropodidae) in caged layer poultry manure. *Journal of entomological Entomology* 83(2): 452-457.
- WOODROFFE, G. E. 1953. An ecological study of the insects and mites in the nests of certain birds in Britain. *Bulletin of Entomological Research* 44: 739-772